# KENWOOD

# SERVICE MANUAL

# TS-711A/E,TS-811A/B/E GD-10, TU-5,VS-1

# 144MHz/430MHz ALL MODE TRANSCEIVER

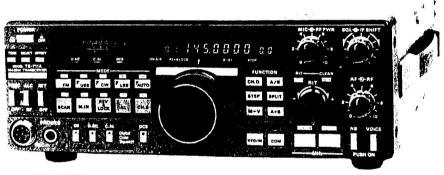


Photo is TS-711A.

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VICOEL	TS-711A (K,M1,M2,X)	TS-711E (T.W)	TS-811A (K)	TS-811B (M,X) TS-811E (T,W)
SWITCH UNIT	X41-1580-11	X41-158C-61	X41-1580-01	X41-1580-01 (M,X) X41-1580-62 (T,W)
AVS UNIT	X43-1490-11	X43-1490-11	X43-1490-11	X43-1490-11
RE UNIT	X44-1620-11	X44-1620-01	. X44-1650-11	X44-1650-01
FINAL UNIT	X45-1380-11	×45-1380-11	X45-1390-11	X45-1390-01 (M,X X45-1390-61 (T,W)
1F UNIT	X48-1400-11	X48-1400-00	X48-1400-01	X48-1400-01
AF UNIT	X49-1180-00	X49-1180-00	X49-1180-00	X49-1180-00
PLL UNIT	X50-1990-11	X50-1990-00	X50-1990-12	X50-1990-01
HET UNIT	_	_	X50-2010-10	X50-2000-00
TONE UNIT		X52-1290-60	_	X52-1290-60 (T,W
CONTROL UNIT	X53-1410-11 (K,M1) X53-1410-21 (M2,X)	X53-1410-51 (T) X53-1410-61 (W)	X53-1410-12 (K)	×53-1410-22 (M,× ×53-1410-52 (T) ×53-1410-62 (W)
DISPLAY UNIT	X54-1820-11	X54-1820-11	X54-1820-11	X54-1820-11

Table 1 TS-711A/E, TS-811A/B/E PC Board chart

### TS-711A/E

13-711A/C			,		
Destination	Frequency (MHz)	vFO step (kHz)	OFFSET s	nift (Hz)	Tone circuit
K,M1,M2	144.000~ 147.995	5	- S + ±	600	Option
т	144.000~ 145.995	12.5	- S +   =	600	1750Hz Tone Burst
w	144.000~ 145.995	12.5	- S + =	600	1750Hz Tone
X	144.000~ 147.995	5	- S + ±	600	Option

### TS-811A/B/E

Destination	Frequency (MHz)	VFO step (kHz)	TX OFFSET DISPLAY	Repeater shift (kHz)	Tone circuit
K	430.000~ 450.000	25	- S +	± 5	Option
M,X	430.000~ 440.000	25	- S +	± 5	1750Hz Tone Burst
т	430.000~ 440.000	12.5	- S +	± 1.6	1750Hz Tone
w	430.000~ 440.000	12.5	- S +	+7.6 -1.6	Option

Table 2 Frrequency configuration of destination

			K,M1,M2	T,W
MODE	STEP CH.Q	OFF	. 0	N
	OFF	10Hz	5kHz	12.5kHz
FM	ON	100Hz	5kHz	5kHz
SSB	OFF	10Hz	5kHz	5kHz
CW	ON	100Hz	1kHz	1 1kHz

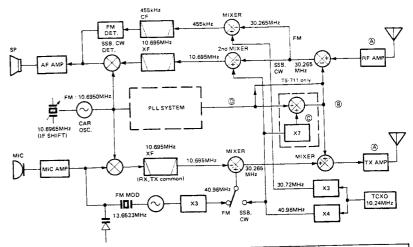
Table 3 Frequency step function's chart

### TS-711/TS-811 FREQUENCY CONFIGURATION

Fig. 1 represents the frequency configuration. Reception uses a double conversion superheterodyne system, in which the second IF (Intermediate Frequency) differs according to the mode. Here, the signal from the antenna is mixed with the PLL (Phase Locked Loop) local OSC (Oscillator) signal in the first mixer common to the respective modes and is then converted to the first IF at 30.265MHz. At this point, the first IF is separated between SSB/CW and FM modes. In SSB/CW, it is mixed with a 40.96MHz local OSC signal (4 times the TCXO frequency) in the second mixer (Q34) and is converted to the second IF at 10.695MHz. Then, this IF is product detected with a 10.6965MHz carrier. In the FM mode, it is mixed

with the 30.72MHz local OSC signal (3 times the TCXO frequency) in the second mixer (Q36) and is converted to the second IF at 455kHz. Then, this IF is detected. In SSB/CW transmission, the SSB/CW signal at 10.695MHz is mixed with the 40.96MHz local OSC signal (4 times the TCXO frequency) in the balanced mixer (Q6/Q7) and is converted to a 30.265MHz signal. It is then mixed with the 113.735–115.725MHz PLL signal to the transmission frequency. In case TS-811, PLL signal (113.015–123.005 MHz) mixed with the 296.720MHz (A), 286.720MHz (B,E) HET signal to the transmission frequency. In the FM mode, a 13.6533MHz X'tai OSC signal, used in place of the 40.96 MHz local OSC signal, is modulated and multiplied by 3 to a 40.96MHz local OSC signal.

### CIRCUIT DESCRIPTION



				TS-811 (M,X)
Modei TS-711	(K,M1,M2,X)	TS-711 (T,W)	TS-811 (K)	TS-811 (T,W)
0 144,000	- 147.995MHz	144.000 - 145.995MHz	430.000 - 449.995MHz	430.000 - 439.995MHz
	- 117.730MHz		399.735 - 409.730MHz	399.735 - 419.730MHz
© 113.735	-	_	296.720MHz	286.720MHz
	- 117.730MHz	113.735 - 115.730MHz	113.015 - 123.005MHz	113.015 - 123.005MHz

Fig. 1 Frequency-related block diagram

### **RF UNIT**

### (X44-1620-XX) : TS-711, (X45-1650-XX) : TS-811

### Reception system

The signal input from the RA terminal enters the RF amplifier (Q1) through the ATT circuit (-20dB) TS-711 only. The RF amplifier uses GaAs FET: 3SK129. The input uses a 2-pole helical and the output a 3-pole helical, thus obtaining the desired bandwidth and skirt attenuation. The input signal is converted in the receiving mixer, Q2: C-MOS FET: 3SK122 (in the TS-811, GaAs FET: 3SK129), to the first IF at 30.265MHz. Then, the first IF is convertes to the RIF level signal through the 2-stage MCF (Monolithic Crystal Filter) and is output to the IF unit

### • Transmission system (TS-711)

The lower IF signal (30.265MHz) from the IF unit is mixed with the HET signal in the FET balanced mixer (Q3, Q4 : 25K192A(GR)\*N) and converted to the transmission frequency. From this transmission signal, any spurious component is eliminated by the 5-stage VCT (Varactor Tuned) circuit in which the PLL unit CV (Correction Voltage) is used.

Further, the transmission signal is amplified up to the drive output level of for the output transceiver 0.3W for the output transceiver in amplifier Q6. This output is fed to the final module.

### • Transmission system (TS-811)

The lower IF signal (30.625MHz) from the IF unit is mixed with the HET signal in the Schottky-type DBM (Double Balanced) mixer and is converted to the transmission frequency. From this signal, any spurious component is eliminated by the 2-stage band-pass amplifier with small Hi-Q helical coils. In particular, the second-stage band-pass amplifier has helical coils connected in series, thus providing acute BPF characteristics.

Further, the transmission signal is amplified up to the drive output level of for the output transceiver 0.35W for the output transceiver in amplifier Q4. This output is fed to the final module. VR1 at Q4 controls Q4's idling current The idling current is set to about 15mA for this stage.

ltem	Rating	
Nominal center frequency	30.265MHz	
Pass bandwidth	± 6.5kHz or more at 3dB	
Attenuation bandwidth	± 32kHz or less at 40dB	
Ripple	1.5dB or less	
Loss	3dB or less	
Guaranteed attenuation	60dB or more within ±1MHz	
000,12.11.000	Spurious level : 40dB or more	
Input and output impedance	1.4kΩ ± 10%/1pF ± 10%	

Table 4 MCF (L71-0248-05) (RF unit L4 TS-711, L16 TS-811)

### IF UNIT (X48-1400-XX)

### Reception system

The reception system is generally divided into SSB/CW and FM modes.

### 1) SSB/CW mode

The RIF signal (30.265MHz) from the RF unit (X44-1620-11: TS-711, X45-1650-XX: TS-811) is mixed with the 40.96MHz output from Q2 at Q34: 3SK73(Y) and is converted to the 10.695MHz second IF. Then, this signal is amplified via the noise blanker gate circuit and SSB filter L12 by IF amplifiers Q20-22: 3SK73(GR) (to which AGC is applied), and is then mixed with the carrier OSC signal by product detector (D10-13: IN60) to obtain a demodulated audio output.

For AGC, the IF output of Q22 is taken through AGC buffer Q24: 2SC2458(Y). Q23 controls the AGC voltage. Part of the output of AGC buffer Q24 is connected as the SSB squelch release signal with SSB squelch mixer Q40: 2SC2668(Y,O) via Q39.

Q25 is the AGC time constant selection circuit. Q26 and Q27 from the S-meter amplifier.

### 2) FM mode

The R1F is input to mixer Q36: 2SC2668(Y) via gate-grounded amplifier Q35: 2SK125. For the local OSC signal, 30.72MHz is obtained by multiplying the PLL 10.24MHz reference by 3-times (Q38). There, the R1F signal is converted to the 455kHz second 1F. This output is amplified via ceramic filter L31 in the 1F amplifiers, consisting of Q44: TA7302P, Q45: 2SC2668(Y) and Q46:  $\mu$ PC577H, and is then demodulated by ceramic discriminator L34: CFY455S.

The demodulated signal is filter separated between the AF pre-amplifier Q49 : 2SC2458(Y) and the squeich noise amplifier Q53 : 2SC2458(Y), Q54 : 2SC3113(B). The "busy" lamp is controlled by the squeich circuit and the center detection circuit Q47 :  $\mu\text{PC4558C}$ . To supress ignition noise, a "killer" circuit using Q62 is added and is controlled by Q61.

### CIRCUIT DESCRIPTION

### 3) Noise blanker

Q41 noise amplifier the second IF output, obtained by mixing the 30.265MHz first IF at Q36. It is switched by Q43, Q37 is a switching circuit to blank PLL reset noise which would otherwise occurs every 20kHz.

### 4) SSB squelch

This acts as a noise squelch. The SSB squelch release signal, taken from AGC buffer Q24, is input to buffer Q39 through squelch sensitivity pot VR6. This output is mixed with 10.24MHz in the SSB squelch mixer Q40 and converted to 455kHz. This signal is then input to the FM IF amplifier. Thereafter, the FM squelch circuit is used to provide SSB squelch.

In the SSB mode, Q56 in the squelch circuit operates to set the attack and slow release time constants.

### Transmission system

### 1) SSB and CW mode

The audio signal from the AF unit is amplified in the microphone amplifier Q28–30 : 2SC2458C and sent to the balanced modulator, D16 : ND487C1-3R. In CW mode, the modulator is unbalanced by DC, and this carrier signal output from the modulator is used. The double sideband output is filtered by SSB X'tal filter L12 amplified by FET Q5 : 3SK73(GR), and mixed with the 40.96MHz output from Q2 in balanced mixer Q6, Q7 : 2SK161(GR) for conversion to the TIF (Transmit IF) signal at 30.265 MHz. Then, the TIF signal is amplified by FET Q8 : 3SK73(GR) and sent to the RF unit. In CW mode, keying controlled by Q32 and Q8 gate biases using -6V and Q13 switching.

### 2) FM mode

The carrier signal output from the unbalanced SSB modulator is used. Different from the SSB/CW mode is that the local OSC signal used in FM for balanced mixers Q6, Q7 is supplied by X'tal OSC L4 (13.657MHz), which in FM mode operates at 13.653MHz, pulled by varicap D3. This OSC output is tripled 40.96MHz. In the FM mode, ±5kHz frequency deviation is obtained after tripling the direct modulated X'tal OSC output.

### 3) Power control

Fig. 3 shows the power control circuit configuration. The final output is detected, and the ALC (Automatic Level Control) voltage is controlled by Q4 in the Display unit (X54-1820-11). The ALC voltage is applied to the second gates of FETs Q5 and Q8, by which the TIF level is adjusted and then APC (Automatic Power Control) is applied. In addition, the power control, in which two pots are used. controls the G2 voltage of generator buffer Q32, to counter excessive ALC at low power.

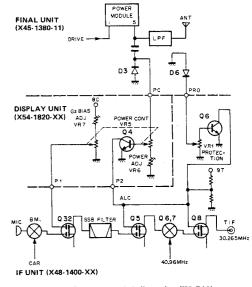
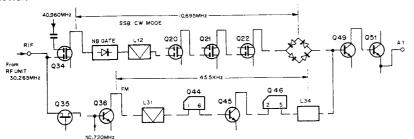


Fig. 3 Power control cinfiguration (TS-711)

	Symbol Condition					
Item			Max.	St.	Min.	Unit
Foward Voltage (DC)	VF1	1F=50mA			0.7	٧
Foward Voltage (DC)	VF2	IF=1.0mA		0.2	0.3	V
Foward Voltage Difference	ΔVF2		1		0.02	٧
Terminal Capacitance	Ct	VR=0		0.9	1.2	рF
Terminal Capacitance Difference	ΔCt	f=1.0MHz			0.2	рF

Table 5 ND487C1-3R Electric characteristic (IF unit D16)

### RX SECTION



### TX SECTION

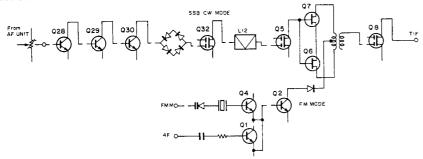


Fig. 2 IF unit block diagram

### AF UNIT (X49-1180-00)

### Microphone amplifier

The signal from the microphone is amplified by Q1: 2SC2459(GR), which is common to both FM and SSB modes. In FM mode, the signal is subject to 6dB/oct pre-emphasis by Q4 (1/2): NJM4558S and is amplified by OP amplifier Q4 (2/2). Then, it is high-cut by active LPF (Low Pass Filter) Q9 for -24dB/oct via amplitude limiter D8: MC911 and applied as modulation to the X'tal OSC in the IF unit.

In the SSB mode, the output from amplifier Q1 is impedance-converted by emitter-follower Q3 : 2SC2458(Y) and provided as modulation for the balanced modulation in the IF unit through the microphone gain control on the front panel. The input signal to pin AN1 of accessory terminal ACC2, in the SSB/CW mode is mixed with the output of microphone amplifier Q3 and is then input to the microphone gain control. In the FM mode, it is input to amplifier Q4, but not through the pre-emphassis circuit Further, Q2 is controlled by the signal input to ACC2 pin MM to turn OFF amplifier Q1 for microphone muting.

### Processor

When the processor SW is ON, the processor circuit consisting of Q5, Q6 and Q7 is connected through transistor switch Q8, Q6 is an amplifier circuit with ALC. The NFB (Negative Feedback) signal from Q5 pin 3 is amplified by Q7, detected by D5 and input for ALC at pin 6. Then, the input is controlled by ALC output pin 5.

Q6, an FET switch, adjusts the SSB level to that which has been previously adjusted in the FM mode.

### Other circuits

Q11 is the AF PA. Transistor Q10 is an AF amplifier through which the signal is supplied to ACC2. Q12 is the CW side-tone OSC circuit. Q13—Q16 forms the CW semi-break-in circuit

## FINAL UNIT (X45-1380-11): TS-711, (X45-1390-XX): TS-811

The drive signal from the RF unit is amplified up to 25W by power hybrid Q1 : M57727 (TS-711), Q2 : M57745 (TS-811). It is then supplied to the antenna through the ANT switch and the LPF for removal of harmonic component content.

In addition, ALC detection, RF meter, reflected Power detection and fan temperature detection circuits are provided. The RF meter circuit is a peak holding circuit in which voltage doubler detection is used. The final PA hybrid is protected in two ways. Reflected power (VSWR) is detected from the antenna circuit and lowers the drive voltage by control of the ALC reference voltage to prevent damage to the final PA hybrid for the second protection circuit, thermistor TH1 detects the Final unit temperature to control the fan and prevent abnormal heating in the Final unit PA.

### AVR UNIT (X43-1490-11)

The AVR (Automatic Voltage Regulator) unit consists of the rectifier and filter section and the AVR circuit section. The AVR circuit section has 13.8V, 8V and 9V AVR circuits and a temperature protection circuit. There is also a fan drive circuit.

The 13.8V AVR circuit consists of Q1—Q4 and pass transistor, Q5 : 2SD717. Transistor Q1, which controls Q5 emitter, supplies power (pin BB) which is separately rectified and filtered.

The fan is switched by comparator Q10 (1/2) and Q11 after heat detection by thermistor TH1 in the Final unit. The temperature protection circuit functions to stop transmission if the transformer heats abnormally due to excessive continuous transmission, etc. during AC operation. The detection circuit, like the fan, turns OFF the AVR 9T (9V, transmit) output.

### PLL UNIT (X50-1990-XX)

The PLL unit has a double loop configuration an ouput in 10Hz steps and uses a 10.24MHz ·TCXO (Temperature Compensates Crystal Oscillator) (±3ppm) as the reference OSC. 10Hz step operation is achieved by dividing the output of the 2kHz comparison PLL (loop B) by a 1/200 divider. Digital tuning in 10Hz steps is obtained by mixing that division signal with the output of the 20kHz comparison PLL (loop A). In addition, the carrier OSC, which is located in the PLL unit, is configures to an IF shift.

Loop B is a mixing type PLL. The VCO output operates from 64–68MHz (Q28 : 25K192A (GR)\*N)) in loop B and, is mixed in Q31 : SN16931P with a 51.2MHz signal. This infection signal is derived by multiplying 10.24MHz 5 times in Q32 : 25C2668(Y,O) via buffer amplifier Q29 : 25C2668(Y) and then converting to 12.8–16.8MHz.

### CIRCUIT DESCRIPTION

Then, the resultant signal is amplified in Q30: TA7302 and divided at a frequency division coefficient of from 6400—8400 so that a 2kHz output is obtained. Further, 10.24 MHz is also divided by 1/10 at Q36 and again divided by 1/5, and the resultant signal is phase compared with the 2kHz reference signal at Q21: MC145155P\*K.

The PD (Phase Detector) output is converted to a DC Correction Voltage by a 3 transistor stage LPF (Q25–27 2SC2459(BL)) to control the VCO (Q28).

Additionally, part of the 64-68MHz VCO output which passed through buffer amplifier Q29 is subject to 1/2000 division by divider IC Q23: M5449L for 1/1000 division. and Q22 : SN74LS90N for 1/2 division through buffer Q24: 2SC260(Y.O). The output of Q22 therefore becomes 320-340kHz at a 10kHz step rate. This output and the output of the carrier OSC are input to mixer Q6: SN16913P. A 11.025MHz output is taken through a ceramic filter and a buffer Q5: 2SC2668(Y), Then, this 11.025MHz output is mixed at Q4: SN16913P with a 20.48MHz signal which is obtained by multiplying 10.24 MHz by two at Q40 : 2SC2668(Y) so that an output of 31.505MHz is obtained. Then this 31,505MHz output is input to mixer Q3 : SN16913P as the loop A local OSC signal. Loop A is a dual modulus type PLL with a 20kHz comparison frequency. Prescaler Q20: µPB555 operates at either a 1/16 or 1/17 division ratio. The VCO output 113.735-115.735MHz TS-711E. 113.735-117.735MHz TS-711A ( Q10 : 2SK129A(GR) N) in loop A is separated into the HET (Heterodyne) output and the input to mixer Q3: SN16913P through buffer Q11: 2SC2668(Y). Mixer Q3 output (80-90MHz) is amplified in a 2 transistor stage amplifier (Q17, Q18: 2SC2668(Y)) through a 80-95 MHz BPF and is input to prescaler 020

The prescaler, connected with PLL IC Q19, forms a swallow counter to divide this input at a frequency division coefficient NA = 4112-4212 (TS-711E), NA = 4112-4312 (TS-711A) to 20kHz. This signal is phasecompared with the 20kHz reference signal obtained by dividing 10.24MHz by two, and 1/256 division of 5.12MHz. The PD output is DC converted by a 3 transistor LPF stage (Q12, 13, 14) to control the VCO (Q10). HET output is obtained by amplifying the VCO output (Q10) by transistor Q1: 2SC2668(Y).

Comparison frequency derivation:

### ● Loop A

The TCXO 10.24MHz output is amplified by two transistor stages (Q34, 35 : 2SC2458(Y)) via buffers (Q33, 38 : 2SC2458(Y)), is divided by Q36/2 to 5.12MHz, which in turn is input to PLL IC Q19. This input is divided 1/256 by the divider contained inside Q19 to 20kHz, which is the comparison frequency.

### Loop B

The 5.12MHz output in loop A is further divided 1/5 by divider Q36/2 to 1.024MHz. This signal is then input to PLL IC Q21 and is divided 1/512 by the divider contained inside Q21 to 2kHz, which is the comparison signal.

For unlock detection, the output of PLL IC Q19 pin 9 in loop A is used. The power supply to buffer Q1 is switched by transistors Q15 and Q16

The carrier X'tal OSC is switched by diode switches D4 and D5. The bias voltage for D4 is applied from the 8C (8V DC common supply) line, and is independent of the mode. However, in the LSB mode, D4 and D5 can be selected by the ratios of R37/R38 and R40/R39.

Item	Rating
Center frequency of 3dB bandwidth	11.025MHz ± 50kHz
3dB attenuation bandwidth	Within 150 ± 40kHz
20dB attenuation bandwidth	380kHz or less
Insertion loss $20 - \log \left(\frac{E1}{2 \cdot E2}\right)$	8dB or less
Spurious (Within 9-12MHz)	38dB or more
Input and output impedance	330Ω

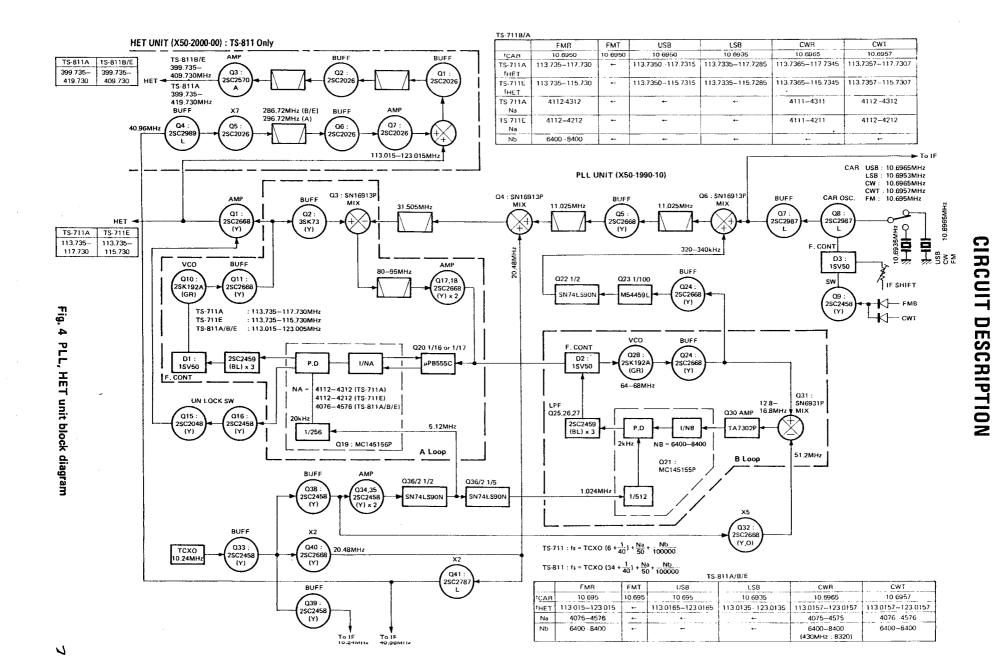
Table 6 Ceramic filter (L72-0346-05) (PLL unit L8,10)

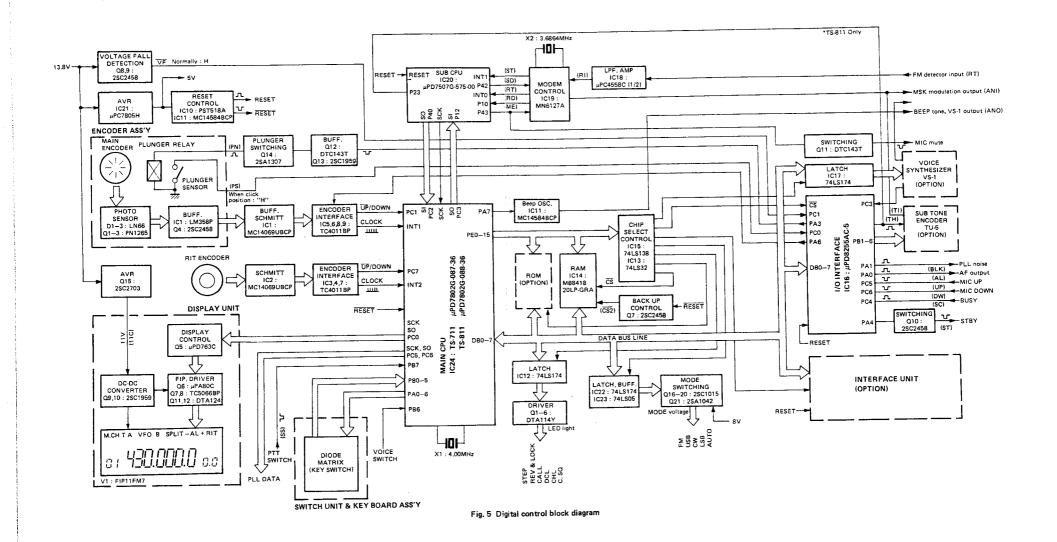
### **HET UNIT**

(X50-2000-00) : TS-811 M,X,T,W only (X50-2010-10) : TS-811 K type only

The HET unit gives the HET output by mixing the PLL VCO output and the local OSC signal, which is obtained by a 7 times multiplication of the 40.96MHz local OSC from the PLL unit. 40.96MHz from the PLL unit is amplified up to 0.5V (rms) by amplifier Q4. To remove unwanted harmonic components, it is low pass filtered by amplifier Q7 through a Hi-Q tuning circuit (stage Q6) to become the local OSC signal for HET section.

This signal is mixed with the PLL signal (113.015–123.015 MHz) in the Schottky barrier DBM (Double Balanced) diode mixer: ND-487 and converted to the actual HET signal of from 399.735–409.735MHz (TS-8118/E), 399.735–419.730MHz (TS-811A). After passing a 2-stage bandpass amplifier with small helical coils to obtain the necessary band-width, it is amplified up to the HET signal level by broad band amplifier Q3.





### CONTROL UNIT (X53-1410-XX)

### Basic configuration

Fig. 5 shows the block diagram of the digital control section. The microprocessor, which has an 8-bit (ROM, 6-kbyte) main CPU IC24: μPD7802G-087-36 (TS-711), μPD7802G-088-36 (TS-811) and a 4-bit (ROM, 2-kbyte) sub CPU IC20: μPD7507G-575-00, uses a CMOS RAM IC14: MB847C-20LP-GRA with a capacity of 8 bits x 2kbytes as the external memory IC, the I/O icterface IC IC16: μPD8255AC-5 for I/O port extension and three 6-bit D-flip-flop ICs IC12, 17, 22: 74LS174. In addition, it is provided with 24 pin IC socket for the external ROM for optional personal computer interface.

These ICs, connected in parallel with the data bus in the main CPU, exchange data with the main CPU synchronizes

by timing signals  $\overline{\text{WR}}$  or  $\overline{\text{RD}}$  from the main CPU, or the  $\overline{\text{CS}}$  signal from IC15. IC15, a 3 to 8 bit line decoder decodes inputs to address lines PE13—15 in the main CPU to generate the chip select signal  $\overline{\text{CS}}$ ). In addition, IC13 takes an OR logic between signals  $\overline{\text{CS}}$  and  $\overline{\text{WR}}$  to supply the clock pulse to IC12, IC 17 and IC22, all of which are used as latches

The main CPU controls the frequency, mode, offset, tone, display, memory, dial click mechanism, DCL system, voice synthesis, etc. and accepts interface with the sub CPU or an external personal computer.

The sub CPU, (common to the TM-211, 411, TR-2600, and TR-3600) interfaces with the main CPU or the MODEM, IC IC19, to handle digital signal code conversion and control tone ON/OFF and other such operation.

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
1	PA3	0	Output for plunger switching	ت	21	PB3	0	Sub-tone frequency data output	
	PA2	0	Unused (NC)					(T3)	
2	1 172		0.1.000		22	PB4	0	Sub-tone frequency data output	
	PA1	0	PLL noise blanking puise		1		i	(T4)	
3	FAI	"	output (BLK)	~~	23	PB5	1 0	Sub-tone frequency data output	1
4	PAO	0	AF output mute (AL)		1 _	i		(T5)	
<del></del>	RD	1	Read strobe input	7	24	PB6	0	Sub-tone frequency data output	1
<del>5</del>	CS	<del>                                     </del>	Chip select input		1		<u> </u>	(T6)	
7	GND	<del> </del> -	GND		25	P87	0	Unused (NC) : only in area T,W	i _
	A1	<del> </del>	Address bus (A1)		1	i	1	for TS-711/811, 1750Hz con-	1
8	AO	+	Address bus (A0)	-	1	1	i	tinuous tone control output (TH)	-
	PC7	<del></del>	Unused (L)	i	26	Vcc	Ī	Power supply pin (+5V)	ļ
10		+-:-	MIC DOWN switch input (UP)	7	27	D7	1/0	Data bus (D7)	
11	PC6	<del>                                     </del>	MIC UP switch input (DOWN)	7 7	28	D6	1/0	Data bus (D6)	
12	PC5	<del>                                     </del>	Busy input (SC)		29	D5	, 1/0	Data bus (D5)	!
13	PC4	+	Plunger sensor input (PS) :		30	I D4	1/0	Data bus (D4)	
14	PC0	1	"H" at click		- 31	D3	1/0	Data bus (D3)	<u>i                                     </u>
		<b>⊥</b> —	Low supply voltage detection		32	D2	1/0	Data bus (D2)	1
15	PC1	1 1		17 6	<b>—</b>	: D1	1/0	Data bus (D1)	1
			input: "L" at less than about	-	34	D0	1/0	Data bus (D0)	
	$\perp$		9.5V	<del></del>	35	RESET		Reset input	ŢŢ
16	PC2		Unused (L)		+	WR	1	Write strobe input	17
17	PC3	1	Voice busy input (BY)	1-1-5	37	PA7	0	Unused (NC)	!
18	P80	0	Unused (NC) Sub-tone frequency data output	i -	38	PA6	. 0	Encoder puise select output	1 -
19	PB1	0	1		1	1		"H" at click	1_
			(T1)	<del></del>	39	PA5	1 0	Unused (NC)	
20	P82	0	Sub-tone frequency data output		40	PA4	1 0	Standby (transmission) output :	1 -
			(T2)	İ	1	1 . ~	1	"H" in transmission	1-

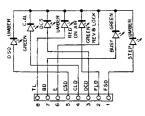
Table 7 Function of μPD8255AC-5 (Control unit IC16)

### TS-711/811

### CIRCUIT DESCRIPTION

### Key switch section

The key switches on the front panel are arranged in a diode matrix (Fig. 6) and their signals are input to the main CPU in a key scan system. The switches, LEDs, RIT encoder, etc. on the front panel are electrically connected in the switch unit and sent to the control unit over simple wiring.



LED : LN01201C (RED) LN01301C (GREEN) LN01401C (UMBER)

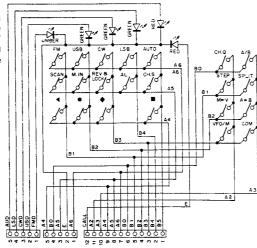
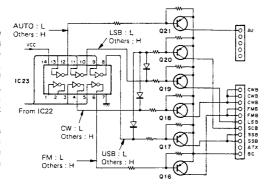


Fig. 6 Keyboard ass'v schematic diagram

### Display/mode control section

The fluorescent display section, a using custom IC: FIP11FM7, serially transfers the data corresponding to the display contents from the main CPU. The data transferred is 79 bits at power ON and 71 bits whenever the display contents change. The data is output by use of 3 pins SCK (clock), SO (data) and PCO (enable) from the main CPU when pin PCO is "L", After emission of all data bits, pin PCO is made "H". The "CALL", "STEP", "REV & LOCK", "DCL", "CHL", "C" and "SQ" LEDs each light by switching the latch output (active "L") of IC12: 74LS174 via digital transistors Q1—Q6. Mode LED's light with the voltage for that mode, The voltage for each mode is produced by switching 8V by Q16—21 with the latch output (active "H") of IC22: 74LS174 configured as an open-collector output by IC23: 74LS074.



Normally Tr Q16-21 (base) voltage level is "H" and collector voltage level is "L", When MODE switch is turned to FM position, Q16 base is turned low to high level. Then, Tr Q16 is turned ON (collector is high level).

Fig. 7 MODE switching circuit

### CIRCUIT DESCRIPTION

### DCS system control section

The processing of the digital control signal used in the DCS system is performed by the sub CPU (IC20 :  $\mu$ PD75076-575-00), the MODEM process IC (IC19 : MN6127A) and IC18 :  $\mu$ PC4558C.

In transmission, first, the data (digital code, call sign, idle channel) for the control signal is transferred to the sub CPU from the main CPU. In the sub CPU, logic transforms that data to NRZ (None Return to Zero) code, which is then output to IC19. It is subject to MSK (Minimum Shift Keying) modulation at IC19. Subsequently, that output is input to Q4 in the AF unit via pin ANI and is applied as

FM modulation. In reception, the signal which was subject to FM detection at discriminator L34 in the IF unit is input to IC18 from pin RT. IC18, an active filter, cuts off the high frequency component of this signal and also amplifies it up to the proper input level for IC19, and it is then output to IC19.

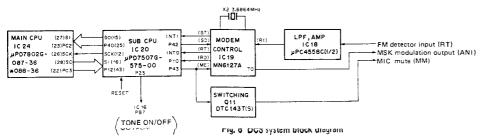
At IC19, it is subject to MSK demodulation to NRZ code and is output to the sub CPU, in which it receives the reverse logic operation to that in transmission and is transferred to the main CPU. For the functions of IC pins used in this transfer. see Fig. 8 and Table 8, 9.

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
.1	NC				27	NÇ			
2	P73		Unused (L)		28	P42	0	Transmission data output	
3	RESET	1	Reset input		1			to IC19	127
4	NC				29	NC			
5	CL1		CR connection pin for clock		30	P43	0	IC19 enable output	
		ļ	pulse OSC		31	Vss		GND	
6	NC			1	32	X1		Unused (NC)	
7	VDD	1	Power supply pin (+5V)		33	VDD		Unused (NC)	
8	NC	1			34	X2	1	Unused (L)	
9	CL2	i -	CR connection pin for clock		35	, NC			1
		1	pulse OSC		36	P20	0	Unused (NC)	
10	INT1	ı	Clock pulse input for data		37	P21	0	Unused (NC)	TT.
			transmission to IC19 (ST)	-	38	P22	0	Unused (NC)	
11	INTO	1	Clock pulse input for data		39	P23			1
		}	reception from IC19 (RT)	177	40	NC			
12	SCK	0	Serial clock pulse output		41	P10	1 1	Reception data input from IC19	ŢŢ
			(for main CPU)		42	P11	Ţ	Unused (H)	
13	NC				43	P12	1	Communication request input	
14	NC				1		İ	from main CPU (IC20)	. د
15	so	0	Serial data output (for main CPU)		44	P13	1	88.5Hz tone control input	
16	SI	1	Serial data input (for main CPU)		1			(connected to P23)	ן ר
17	P60	1	Unused (L)		45	NC			
18	P61	1	Unused (L)	1	46	P30	0	Unused (NC)	
19	P62	- 1	Unused (L)		47	P31	0	Unused (NC)	
20	P63	1	Unused (L)		48	P32	0	Unused (NC)	T
21	P50	0	Unused (NC)	1	49	P33	0	Unused (NC)	
22	P51	0	Unused (NC)	1	50	P70	1	Setting of interface function	
23	P52	0	Unused (NC)		1	ļ		for IC19, IC20 and IC24 (H)	
24	P53	0	Unused (NC)		51	P71	1	Setting of interface function	
25	P40	10	Communication request output		1			for IC19, IC20 and IC24 (L)	
			to main CPU (IC20)		52	P72		Setting of interface function	
26	P41	0	Unused (NC)		1			for IC19, IC20 and IC24 (H)	1

Table 8 Function of µPD7507G-575-00 (Control unit IC20)

in No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
1	PE15	0	Address output for chip select		30	X2	-	Ceramic OSC connection pin	
			(IC15), address bus		31	X1		Ceramic OSC connection pin	1
2	0 OUT				32	Vss		GND	
3	D87	1/0	Data bus (D7)		33	PAO	0	Key matrix output	7
4	DB6	. 1/0	Data bus (D6)		34	PA1	. 0	Key matrix output (Ā1)	ער
5	DB5	1/0	Data bus (D5)		35	PA2	0	Key matrix output (A2)	
6	D84	1/0	Data bus (D4)		36	PA3	0	Key matrix output (A3)	ַ עַר
7	DB3	1/0	Data bus (D3)		37	PA4	0	Key matrix output (A4)	
8	DB2	: 1/0	Data bus (D2)		38	PA5	. 0	Key matrix output (A5)	12
9	DB1	1/0	Data bus (D1)		39	PA6	0	Key matrix output (Ã6)	ାଅ
10	DB0	. 1/0	Data bus (D0)		40	PA7		Beep OSC control signal output	Ţ
11	INT2	1	RIT clock pulse		41	P80	1	Key matrix input (A0)	i ¬_
12	INTI	1	Main encoder clock pulse		42	PB1	1	Key matrix input (AT)	TZ
13	INTO	<del></del>	i Interruption input for interface		43	PB2	1	Key matrix input (A2)	$\Box$
15			with personal computer (RDY)	7	44	PB3	7 1	Key matrix input (A3)	17_
14	WAIT		Unused (connected to Vcc)		45	PB4	1	Key matrix input (A4)	TL
15	M1		Unused (NC)		46	PB5		Key matrix input (Ā5)	15
16	WR	0	Write strobe output for IC14,		47	PB6		Key matrix input (A6)	17_
10	VVI		IC16 and IC13 (WR)		48	PB7	1	Standby (P.T.T.) input (SS)	1
17	. RD	0	Read strobe output for IC14		49	PEO	. 0	1	
17		1	and IC16 (RD)		50	PE1	0	-	
18	PC7	1 -	BIT UP/DOWN		51	PE2	0	-	
19	PC6	0	2nd PLL (B loop) data latch (EB)		52	PE3	. 0	7. [	
20	PC5	0	1st PLL (A loop) data latch (EA)		53	PE4	, 0	Address output for	-
21	PC4	1 0	Unused (NC)		54	PE5	0	external RAM (IC14)	
22	PC3	0	Communication request output		55	PE6	. 0	and external ROM	
22	1 00	"	to sub CPU (IC20)	,	56	PE7	0	(option)	-
23	. PC2	+	Communication request input		57	PE8	0	Address	
25	102		from sub CPU (IC20)	╌	- 58	PE9	0	bus	
24	PC1	+	Main encoder UP/DOWN		59	PE 10	10	T   !	-
25	PCO	<del> </del>	Enable output for display LSI		60	PE11	0	7 }	
25	100	"	(Q5 in display unit) (ED)	, "	61	PE12		Unused (NC)	
26	SCK	1/0	Serial clock pulse I/O (Output for		62	PE13		Address output for chip select	:
20	300	1,70	PLL output for display IC.	7_5	1			(IC15)	
		į	input for sub CPU)	_	63	PE14	0		
27	· S1	<del>i i</del>	Serial data input (for sub CPU)		-1			<u> </u>	i
27	SO	0	Serial data input (for sub CPU,		64	Vec	1	Power supply pin (+ 5V)	-
28	50	, 0	PLL and display IC)		-  ~	1	1	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
29	RESET		Reset pulse input	17 5	-1				

Table 9 Function of µPD7802G-087-36 (Control unit IC24) TS-711 Function of µPD7802G-088-36 (Control unit IC24) TS-811



### **CIRCUIT DESCRIPTION**

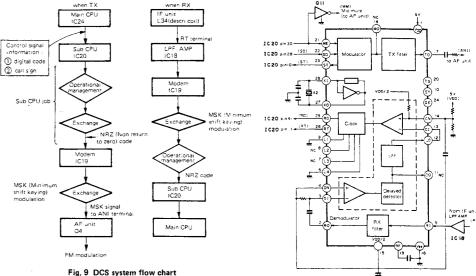
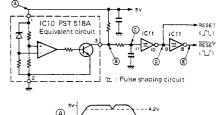


Fig. 10 Modem IC MN6127A block diagram (Control unit IC19)

### Reset and backup

A custom (C (IC10: PST518A) (Fig. 11) is used to output the pre-determined reset pulse at power ON or momentary power failure. At IC10, the voltage in the 5V line is detected. When it becomes less than 4.2V, the open-collector output is turned ON, thus, "H" (RESET) and "L" (RESET) pulses of about 10msec are generated through a Schmitt trigger when resetting and applied to the reset pin of each IC. At power OFF, when Q8 and Q9 detect the supply line voltage (13.8V) is less than about 9.5V, the CPU returns the transciever to the reception mode to stop all other processes. In addition, when the voltage at the 5V line becomes less than 4.2V, Q7 (normally ON) turns OFF to establish IC14 in the standby (backup) state.



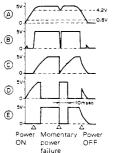


Fig. 11 Reset circuit and waveforms at respective points

### TS-711/811

### CIRCUIT DESCRIPTION

### "Beep" tone oscillator and voice synthesis control section

For the "beep" tone output (including Morse Annunciation), its corresponding ON/OFF signal is output from the main CPU PA7 (pin 40) and is generates in oscillation circuit IC11: MC14584BCP. It is then mixed with the audio output of the voice synthesizer (VS-1) and is input to the AF unit from pin ANC.

The control output (PSO-4, SR) of the voice synthesizer unit (option VS-1) is output from IC17 latch and the control input (BY) is input to IC16 PC3.

### Encoder section

Fig. 12 shows the configuration of the encoder section. The control pulse of the main dial "click" detent mechanism is as shown in Fig.13. When operating the CH.Q., CS., VFO/M., M-V., SELECT, etc., keys, the CPU performs its associated process, judges whether or not the dial is detented, and inputs the status signal of the sensor (pin PS) to IC16 PCO (pin 14). For example, when the dial retent is activates, as when the dial is already detented when pin PS is "H", the process ends. However, when pin PS is "L", a 100msec pulse is emitted from PA3 IC16 pin 17, thereupon the plunger drive pulse (PN) is emitted through the switching operation of Q12: DTC143T(S), Q13: 2SC2459(Y) or Q14: 2SA1307(Y).

After 100msec, the sensor status is checked. If it is "H", the process ends. However, it is found not "H", the process series is repeated. If it does not become "H" after this is repeated 7 times, the CPU stops the process, judging that the plunger ;section has a malfunction.

Out of waveforms EN1, EN2 and EN3 in the encoder, waveforms EN1 and EN2 are connected to four waveforms EN1, EN2, EN1 and EN2 in IC1: MC14069UBCP. These four waveforms are combined with their respective differentiation waveforms and multiplied 4 times in IC5 and IC6 TC4011. Output UP/DOWN and a clock pulse are generates in IC8 and IC9: TC4011 and are entered to the main CPU PC1 (pin 24) and INT1 (pin 12). In the detent mode, the Schmitt trigger differentiation waveform output of EN3 is selected in IC9 and is taked as the clock pulse. RIT encoder waveform chatter is absorbed at Schmitt trigger IC2, and waveforms E1 and E2 are combined with their inversion waveforms and differentiation waveforms. They are then multiplied 4 times at IC4 and IC7, from which signal UP/DOWN and clock pulse outputs are produced and entered to PC7 and INT2 of the main CPU.

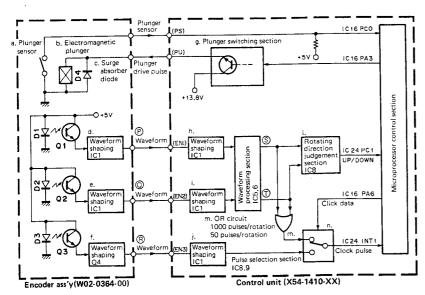


Fig. 12 Configuration of encoder processing section

### CIRCUIT DESCRIPTION

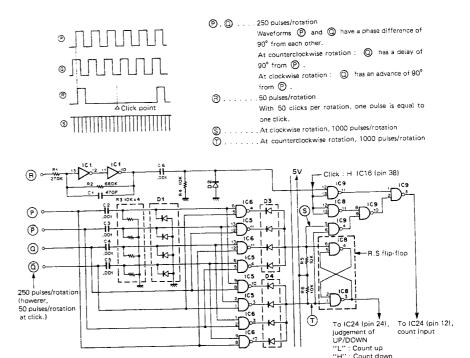


Fig. 13 Output waveform of main encoder

### Other I/O sections

### a. Standby (ST) output :

The P.T.T. switch ON/OFF signal (ST) from pin SS is taken in PB7 of the main CPU. In transmission, Q10 (open-collector) is thus switched with IC16 PA4 (pin 40) "H".

In auto-transmission in the DCL system, the ON/OFF control for Q10 is also generated in the main CPU to control transmission and reception along with a personal computer.

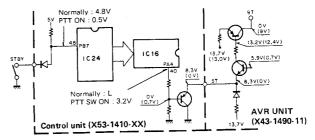


Fig. 14 STBY output circuit

b. PLL select switching noise blanking output

When the data in PLL loop A (in 20kHz steps) changes, the timing pulse (BLK) in synchronization with the data output is output from IC16 PA1 (pin 3). Q37 in the IF unit switches to momentarily mute the PLL select switching noise.

### c. Busy (SC) input :

In scan mode operation, the SC signal corresponding to busy lamp status is input to IC16 PC4 (pin 13) to select between "open" or "busy".

### d. Microphone UP/DOWN switch :

These are input to IC16 PC5 or PC6 after chatter filtering. (The following are for DCL, system control.)

### e. Microphone mute (MM) output :

This signal cuts off microphone audio during digital signal transmission. This signal, which is output to IC19 from P43 of the sub CPU, controls Q11 (open-collector) to switch Q2 in the AF unit.

### f. Audio mute (AL) output :

This mutes the audio output by making IC16 PA0 "H" in code squelch operation, during retrieval of an idle channel or in memory channel check during alert operation.

### Encoder ass'y (W02-0364-00)

### Encoder section

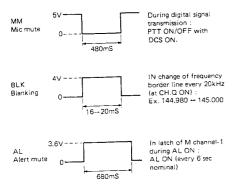
An IR (Infrared) output is taken through a 250 slit/rotation disk is detected at phototransistors Q1 and Q2. These detection signals are each waveform-shaped at comparator IC1 and emitted to pins EN1 and EN2. Then, they are adjusted by VR1 and VR2 so that they have a precise phase difference of 90° from each other with a precise duty cycle of 50%.

An IR output which is taken through 50 slit/rotation disk is detected at phototransistor Q3. The detection signal is amplified at Q4 and emitted to pin EN3. Signal EN3 is extracted without adjustment. Fig. represents each output waveform.

### Detent : electromagnetic plunger section

Whenever the plunger relay is turned ON and then OFF by the Control unit control pulse (pin PN), the detent mode changes to the slew (continuous tuning) mode or vice versa. Normally, the plunger relay is OFF. In addition, the plunger sensor switch is OFF (open) at the detent mode and ON (closed) at the slew mode.

### Connector 4



### Connector (9)

RT . . . In reception of standard modulation signal (1kHz ± 3kHz deviation, 60dBµ) → 100mVp-p (36mVrms)
ANI . In transmission of digital signal, PTT ON/OFF at DCS ON→80mVp-p.
BZ . . . In output of beep sound, M.IN pressed → 22mVp-p.

BZ ....In output of beep sound, M.IN pressed → 22mvp-TO ....In output of 88.5Hz tone (0.6kHz deviation) → 420mVrms.

Fig. 15 Waveforms at 4 and 9 1/0 pins (With harness connected)

### 100mS 100mS Plunger drive pulse (PN) Plunger sensor outpu À Δ 1 2 3 4 6 Sensor Pulse Pulse Sensor operated ON? output OFF

Fig. 16 Relationship between plunger drive pulse and sensor

### CIRCUIT DESCRIPTION

### **DISPLAY UNIT (X54-1820-11)**

### Display section

When display data is transferred on its 3 lines: DD (data) CD (clock) and ED (enable) from the control unit, they are input to the display control IC Q5:  $\mu$ PD763C, Q5 outputs both digit signals (T0–T11) and segment signals (Sa–Sg, i0,11) for dynamic display lighting. (**Table 10**). The digit

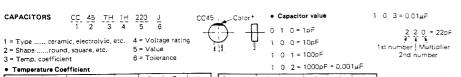
and segment signals are driven by  $\Omega$ 7 and  $\Omega$ 8, and by  $\Omega$ 6,  $\Omega$ 11 and  $\Omega$ 12 so display tube (V1) lights,  $\Omega$ 7,  $\Omega$ 8,  $\Omega$ 6 and  $\Omega$ 11 switch about -23V and +5V. Specifically,  $\Omega$ 12 switches about -23V and +11V, as it drives the red character segments. In addition,  $\Omega$ 9 and  $\Omega$ 10, which are a  $\Omega$ C- $\Omega$ C converter oscillator circuit, produce negative voltages for the display tube and AGC circuits.

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
1	X2	111, Out	IFT connect pin for clock		15	10	0	Segment signal Character	
1	^2		pulse OSC		16	11	0	Segment signal Decimal point	
2	TO	0	Digit signal RIT 10° Hz digit		17	Sa	0	Segment signal a	
3	T1	0	Digit signal RIT 101 Hz digit		18	Sb	0	Segment signal b	
4	T2	0	Unused (NC)		19	Sc	0	Segment signal c	
	T3	0	Digit signal 10° Hz digit		20	Sd	0	Segment signal d	
6	T4	0	Digit signal 10° kHz digit	15	21	Se	0	Segment signal e	
7	T5	0	Digit signal 10 <sup>1</sup> kHz digit		22	Sf	T-0	Segment signal f	
8	T6	10	Digit signal 10° kHz digit		23	Sg	0	Segment signal g	
9	T7	1 0	Digit signal 10° MHz digit		24	CS	1	Chip select input	
10	T8	0	Digit signal 10 <sup>1</sup> MHz digit		25	SCK		Serial clock pulse input	יייי
11	T9	0	Digit signal 10 <sup>2</sup> MHz digit		26	SI	1	Serial display data input	
12	T10	0	Digit signal M.CH 10° digit		27	Vcc		Power supply pin (+5V)	
13	T11	10	Digit signal M.CH 10 <sup>1</sup> digit		28	X1		For clock pulse OSC	
14	GND		GND			1			

Table 10 Function of µPD763C (Display unit Q5)

### PARTS LIST TS-711A/E

### **PARTS LIST**



1st Word	C	! L	Р Н	3		! !
Color	Black	Red	Orange Yellov	v Green	Blue	Violet
ppm/°C	0	-80	-150 1 -220	-330	-470	-750
Tolerano						

nd Word	, c	Н	J	K	T
ppm/°C	± 30	± 60	± 120	= 250	± 500

	1 2/100										
Code	С	۵	G	١	K	M	×	Z	Р	No code	10
(%)	± 0.25	± 0.5	± 2	± 5	= 10	± 20	+ 40	+ 80	+ 100	More 10µF-10~+50	П
İ				i	1	İ	20	-20	0	Less 4.7µF-10~+75	] `
		<u></u>	l .	1	1				1	than	_

٦	Code	В	С	D	F	G
	(pF)	± 0.1	± 0.25	= 0.5	±1	= 2
5						

Less than 10 pF  Rating voltage							
2nd word	А	В					

									Dimensi		
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	<u> </u>
2	100	125	160	200	250	315	400	500	630	800	
1	10	12.5	16	20	25	31.5	40	50	63	: B0	35
0	1.0	1.25	1.6	2.0	2.5	3.15	4,0	5.0	6.3	8.0	
2nd word st vord	Α	В	С	D	E	F	G	н	J	к	٧

Chip capacitors	
(EX) c 2 3	above table.

)ြက္ မှာေမှာ တူလုတ်သိုယ်→ 1 2 3 4 5 6 7 (Chip) (B,F)

• Chip resistor (Carbon)



• Carbon resistor (Normal type)  $(EX) \frac{\frac{8}{7}}{1} \frac{\frac{1}{7}}{\frac{4}{7}} \frac{\frac{8}{7}}{\frac{4}{7}} \frac{\frac{8}{7}}{\frac{4}{7}} \frac{\frac{2}{7}}{\frac{6}{7}} \frac{\frac{6}{7}}{\frac{6}{7}} \frac{\frac{3}{7}}{\frac{4}{7}}$ 

1 = Type ..... ceramic, electrolytic, etc. 2 = Shape ..... round, square, etc.

3 = Dimension

4 = Temp. coefficient 5 = Voltage rating

6 = Value 7 = Tolerance.

Dimension code	L	VV	1
Empty .	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25

### Dimension

Dimension code	L	w	Т	Wattage
E	3.2 ± 0.2	1.6 ± 0.2	0.57	2B
F	2.0 ± 0.3	1,25 ± 0.2	0.45	2A

### Rating wattage

Cord	Wattage		Cord Wattage		Cord	Wattage	
2A	1	10W	2E	1	4W	3A	1W
28	1	8W	2H	1	2W	3D	2W
2C	1	6W		-			

Dimension	

MODEL	TS-711A (K,M1,M2,X)	TS-711E (T,W)	TS-811A (K)	TS-811B (M,X) TS-811E (T,W)
SWITCH UNIT	X41-1580-11	X41-1580-61	X41-1580-01	X41-1580-01 (M,X) X41-1580-62 (T,W)
AVR UNIT	X43-1490-11	X43-1490-11	X43-1490-11	X43-1490-11
RF UNIT	X44-1620-11	X44-1620-01	X44-1650-11	X44-1650-01
FINAL UNIT	X45-1380-11	X45-1380-11	X45-1390-11	X45-1390-01 (M,X) X45-1390-61 (T,W)
IF UNIT	X48-1400-11	X48-1400-00	X48-1400-01	X48-1400-01
AF UNIT	X49-1180-00	X49-1180-00	X49-1180-00	X49-1180-00
PLL UNIT	X50-1990-11	X50-1990-00	X50-1990-12	X50-1990-01
HET UNIT	-	<del>-</del>	X50-2010-10	X50-2000-00
TONE UNIT	-	X52-1290-60	_	X52-1290-60 (T,W)
CONTROL UNIT	X53-1410-11 (K,M1) X53-1410-21 (M2,X)	X53-1410-51 (T) X53-1410-61 (W)	X53-1410-12 (K)	X53-1410-22 (M,X X53-1410-52 (T) X53-1410-62 (W)
DISPLAY UNIT	X54-1820-11	X54-1820-11	X54-1820-11	X54-1820-11

### SEMICONDUCTOR (TS-711A/E)

N : New parts

\* : Please note that parts are sometimes not in stock and it tak

Item	Pe. marks	Part No.	Item	Re- marks	ote that parts are some: Part No.	Item	Re-	
Diode		1N60	Resistor block		S10VB20	IC	maric	BU4011B
	Į	1S1587		1	0.07525	1110	ı	
	1	1SS101	Photo TR		PN126S(R)		1	LM358P
		1\$\$133	11		7141203(H)	11	N	M5L8255AP-5
	-	1SV50	Digital TR	ì	DTA114Y(S)	11	1	M544591,
	1	1SV123	Digital 11	N				MB3713
	N	DAP401	11	114	DTA124EF		N	MB8418-20LP-GRA
		MA856	-		DTC114E(S)	11	-	MC14069UBCP
		MC911			DTC143T(S)		1	MC14584BCP
		MC921	11	1		11		MC145155P*K
	1	MC931	TR	1	2SA1012(Y)	11		MC145156P
		MI308	11		2SA1015(Y)	1		MN6127A
		MI407	11	1	2SA1048(Y)	11		NJM78L05A
	ļ			1	2SA1115(E)	11		NJM4558S
	- 1 .	ND487C1-3R		N	2SA1307(Y)	11	-	NE555P
	1 1	U05B	i I	ł	2SC1815(Y)	11	1	NJM78L05A
	1 1	V06B	11		2SC1959(Y)	11	i	NJM4558S
	]		11	1	2SC2240(GR)		N	PST518A
Vari-cap	1 1	1S2208	11	1	2SC2358-22-A	11	1	SN74LS05N
			11	ĺ	2SC2458(Y)	<b>!</b> !		SN74LS32N
Varistor		VD1223	11	1	2SC2459(BL)	11		
	1 1			i	2SC2459(GR)		1	SN74LS90N
Zener diode	1 1	MTZ6.2JA	11		2SC2538-22-A	11	1	SN74LS138N
	1 1	MTZ6.2J(A,B)	11		2SC2668(Y)	11		SN74LS174N
		MTZ7.5JA	11					SN16913P
	1 1	MTZ8.2J(B,C)		١.	2SC2668(Y,O)			TA7302P
	- i - I	MTZ9.1JB	11	1	2SC2703(O,Y)	11		TC4011BP
	- Í i	MTZ12JB	11		2SC2787(L)	[ ]		TC4069UBP
	1 1		11	1	2SC3113(B)		1	TC5066BP
LED	1 1	LN66(R)	11	N	2SD717(O,Y)	11	1	
	1 1	LN01201C	FET	1		11	N	TMP8255AP-5
	1 1	LN01201C	11 'E'	1 1	2\$K30A(GR)	11	1	µPA80C
	1 1	LN01401C	11	1 1	2SK30A(0)	11		μPB555C
	1 1	LINU1401C	11		2SK125	11	1 1	µPC78M08H
Disply tube	1 1	51044545	11		2SK161(GR)	<b>!</b>	1 1	#PC577H(E,F)
Cushik rong	1 1	FIP11FM7	11		2SK192A(GR)*N	11	1 1	μPC1158H2
Thermister	1 1		11	1 1	3SK73(GR)	11	1 1	µPC4558C
i nermister	1 1	112-102-2	11		3SK73(Y)	11	1	μPC7805H
	1 1	112-103-2	11		3SK122(L)		N	µPD763C
	1 1	112-351-2		N	3SK129(Q,R)			μPD7507G-575-00
	1 1	SDT1000F	11				IN	μPD7802G-087-36
	1 1		Power module		M57727		N	μPD8255AC-5
	1 1						1 1	MI DOZDOAL-5
	1 1		11				1	
			l	ш			1	

### ENCODER ASS'Y (W02-0364-00)

PART. NO	Re- marks	NAME & DESCRIPTION	Q'TY	REFERENCE, NO
CE04CW0J330M		ELECTRO 33 6.3V	1	l C1
LM358P LN66(R)		IC LED	1 3	   IC1   D1, 2, 3
RD14B82C102J RD14B82C105J RD14B82C181J RD14B82C182J RD14B82C222J RD14B82C472J		RES. CARBON       1kΩ         RES. CARBON       1MΩ         RES. CARBON       180Ω         RES. CARBON       1.8kΩ         RES. CARBON       2.2kΩ         RES. CARBON       4.7kΩ	2 2 3 4 1 4	R5,10 R8,13 R1,2,3 R6,7,11,12 R15 R4,9,14,16
R12-2413-05 R92-0150-05		TRIM. POT. $5k\Omega$ SHORT JUMPER	2 2	VR1, 2
PN126S		РНОТО ТВ	3	Q1, 2, 3
V06B		DIODE	1	D1
2SC2458(Y)		TR	1	Q4

# TS-711A/E PARTS LIST

TS-711A/E	GEN	ERAL	
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TS-711A/E	CIVE	117-				210	TIN	CTIO	N 8	QUI	ANTIT	Ÿ				_		
			011	1024				061				1			96	ERENCE.NO	<u> </u>	
PART.NO	NOTE	NAME & DESCRIPTION					1	1	1,		-							
A01-0979-02	N	CASE(A) UPPER	1			1		1	1			1	ì	1	1			
A01-0980-02	N	CASE(B) LOWER	1			1	1	il	1		- 1	1	1	i	1			
A20-2524-03		FRONT PANEL	1	-	Ц_	1	1					<del>- i</del> -						
X20-2324-03			1	ļ .	. i	.					i	Ţ	- 1	i	1			
805-0708-04		SP GRILE	1			1	1	1	. 1	1		- 1	1	!				
810-0668-04	N	FRONT GLASS	1		1	1	1	1	1	-+				<del></del>				
B30-0817-15	<del></del>	LAMP 14V 80MA	1		1	1	1	1	1		i			1	İ			
	N	METER	1		1	1	1	1	1			1	1	i	!			
831-0655-05	i N	SPACER	2		2	2	2	2	2				<del>i-</del>		<del></del>			
839-0407-04		MODEL NAME PLATE TS-711A	1		1	1				1 1	i i	- 1	1		ļ			
B40-3524-04	N	MODEL NAME PLATE TS-711E			10.		1	1			- !	- 1	- 1	!	i			
840-3525-04	N	MODEL NAME PLATE TS-711A	1.0	Jan 1			]		1				!_					
840-3524-04	N_	MUDEL NAME FORTE TO TELL	1		1	1	1	1	1			i	i i	1	1			
841-0134-04	N	CAUTION LABEL DCS	1		1	1	1	1	1	1	į	- 1	- 1					
842-2356-04	N	SWITCH LABEL DCS VOLTAGE INDICATING PLATE 120V	1				- 1					i						
842-1739-04		VOLTAGE INDICATING PLATE 220V	1 -		1	1	1			1			_ !	i				
842-1740-04	1	VOLTAGE INDICATING PLATE 220V	1.	1	-	-1	1			1 1	- 1	1	i	1	i			
B42-1741-04		VOLTAGE INDICATING PLATE 240V	100	1	- [1]		- 1	1		1 1	- :							
842-1740-04		VOLTAGE INDICATING PLATE 220V	+	-	+	-+			1	1					1			
842-1741-04		VOLTAGE INDICATING PLATE 240V	1 1	1	1	1	1	1	1		- 1		- 1	- 1	1			
342-2364-04	N	CURRENT INDICATING PLATE 6A	1 1		î	1	•	1	į -		1	!	- 1	1				
843-1022-04	N	BADGE		4			1			$\vdash$								
843-1023-04	N	BADGE	1	1	ĺ	- [	1	1	i		- 1			i				
B43-1024-04	! N	BADGE	1			i		1 1	1	1 1	!	- 1	!		1			
843-1022-04	N	BADGE			-	-+		-		-								
846-0410-00		WARRANTY CARD	$\top$		.	. 1			1	i		i	į		j			
850-4148-00	i N	INSTRUCTION MANUAL	:	ı ļ	1	1		İ	!		i		- 1	- !				
850-4149-00	l N	INSTRUCTION MANUAL			_	-	1	<u> </u>	<del></del>		-							
B50-4148-00	N	INSTRUCTION MANUAL		1.		- !		1	1			- 1	1					
650-4140-00	"		T.	i	-			1 _	1 .	. 1	1	i	1		1			
204 0/5/ 05	1	CERAMIC FOR AC 470P			2 !	2	2	2	2		-							
C91-0496-05		CERAMIC FOR AC 0.01	1	1	1	1;	1	1	1				- 1	i				
091-0647-05	1	CERTIFICATION OF THE PROPERTY	1	i	- 1	1			į	1			- 1	1	-			
	١.	ENCODER DISC ROTOR			1	1	1				!	;						
009-0306-04		ENCODER DISC STATOR		1	1	. 1	-:				1 :	į	1	1				
009-0307-04		DETECTOR MECHANISM UNIT	- 1	1	1	1	1	1	1 2	- 1	l i	- 1	4	1	1			
040-0627-05	- N	DETECTOR MCCMMTON	i	-	1			!	<u></u>									
	N N	13P PLUG (ACC)		1	1	1	1	1			: 1	- 1	- 1	!	1			
E07-1351-05	l N	VOLTAGE SELECTOR PLUG	- 1	- 1	1	1	1			L ļ	1 !	- 1	- 1	i				
E07-0852-05		4P SOCKET DC		1	1	1	1	1	1 :	ــــــــــــــــــــــــــــــــــــــ			_					
E08-0474-05	N	47 3001127	-	1	1	1	1	1	T :	i i	1		1	í				
E09-0472-05	N			i	1	1	1			1	į l		1	!	1			
E12-0001-15	1	PHONE PLUG (ACS)		1	1	1	1		.i :	1								
E12-0401-15		PHONE PLUG (ACS)	_	1	1	1				i			- 1	1	1			
E18-0351-05	1	3P AC SOCKET		1	1	1	1			1!	1		1					
£29-0463-05		1P JUNCTION CONNECTOR		1	1	1	•	1	1	1	1			1				
E30-1643-15	i	AC CABLE (ACS)		+	-		1	1	$\top$	_								
E30-1644-15		AC CABLE (ACS)		1	1.	i	-	1		i -	i i			i				
E30-1645-05		AC CABLE (ACS)	1.5	100	3 18			1.		1	!				-			
E30-1647-05		AC CABLE (ACS)	_+	1	1		1	1 1		1	1				,			
E31-3049-05	i N	CABLE WITH TERMINAL		1	1	- :1		1 1		i	1	į	! !	- 1				
E31-3091-05	N	CABLE WITH TERMINAL HET		1	1	1	1			i	i	!		1				
E31-3064-00	N	WIRE'S KIT (ACS)		1	1	1	<del></del> -	+	+		+	-						
237.3002.00			15	.1	- 1		ŀ	i	1		ì	-		1	1 .			
F05-2023-05		FUSE 2A	. [	11	. 1		٠.		. 1	.			1	- 1				
F05-1023-05		FUSE 1A			1	1	1	1 1	4	1	<del></del>	├	<del></del>					
F05-2023-05		FUSE 2A	i -		1	1				.	1	l	1 :		,			
	N*		- 1	1	1	1				1	1	1						
F07-0858-03	14 *	SHIELDING PLATE		1	1!	1	1	l  1	1	1	٠ــــــــــــــــــــــــــــــــــ	1	'ـــــــــــــــــــــــــــــــــــــ					
F10-1206-04		JULES THE LEAVE TO THE TENT OF																

						019	STIN	CTI	ON.	8	QUAN	TIT	ΤY				
	h. 0.T.	NAME & DESCRIPTION	011	021				061	071			I					REFERENCE, NO
PART.NO	NOTE	BLINDING PLATE	1			1	1	1	T 1	$\Gamma$				:	1		
15-0655-04	N.×	INSULATING PLATE	1	1	L	1	1	1	! 1	.	ı			1	- 1	1	
20-0521-04	1	INSUCATING PLATE			-	- !			ł	1	1	_	!		;		
		COILED SPRING	. 5		1	5	0.70	100	5			7			1		
G01-0818-04	12.7		100				4	- 4	136	1.0	10	- 1:			- i	i	
301-0818-04	1.40	COILED SPRING	3			3	3	3	3	3	- 1	ı	- 1	1	i		
302-0505-05	1	KNOB FITTING SPRING	2			21	2	2		?				-	- 1	j	
313-0649-04		CUSHION FOR METER				1	1	1				İ	1	1		!	
313-0642-04	İ	CUSHION FOR PLL	1			1	1	i			ļ.	- !	- 1		1	i	
353-0510-04	1	PACKING FOR PANEL	1	_	-	+	<del></del>		+	٠,	_+	-					
033 0320 01			1.4	13	.	. 1				1	. !		l l	1		i	
H01-4573-04	N-	CARTON (INSIDE)	1	10.3	1	1	354		1.3	12:	1.1	- 1	. 1	1			
H01-4574-04	N ·	CARTON(INSIDE)		1	4	- 1	1	L .	1	+							
	N	CARTON (INSIDE)	1			- 1		1			- 1		!	- 1		- 1	
H01-4621-04	N	CARTON (INSIDE)	1	1	1	- 1		ļ	1 3	L	- 1	- 1					
H01-4573-04	l N	CARTON (OUTSIDE) TS-711A	1	1 .	1	1		1									
103-2200-04		(CARTON(OUTSIDE) TS-711E			_		1	1	1		1	- 1					
H03-2230-04	N	CARTON (OUTSIDE) TS-711A	1	1.15	1	1			1 :	1		- }	ĺ		ĺ		
H03-2200-04	N		1	1	1	1 l.	. 1	1	.   :	1	4.						
H10-2596-02	N*	PACKING FIXTURE	1		1	1	1	1		11			1				
H10-2597-02	N×	PACKING FIXTURE	1		i	i	ī	1		il	-	- 1	i i				
H12-1315-04		BUFFER	i		1	i	î			i	į	- 1			!		
H20-1425-03	N	PROTECTION COVER					1			1	-	-+					
H25-0029-04	*	BAG(ACS) 60X110	1		1	1	1	1		1		- 1	1				
H25-0105-04	*	BAG 150X350	1				1	1		1	- [	- 1	. 1		l		
H25-0103-04		BAG 125X250	1	4	1	1		1 1		4		-+			-		
H23-0103-04	+		ĺ	1				ĺ.	1	. i	- 1	i i				i	
		FOOT CASE(B)	4		4	4	4	4		4	- 1					1	
J02-0323-05	]	FOOT CASE(B)	1		1	1	1	1 1		1						<del></del>	
J02-0407-04		FOOT CASE(SIDE)	- 4		4	4	4			4	- 1	í					
J02-0403-04		FOOT HARDWARE	2	1	2	2	. 2	. 2		2					l	ļ.	
J21-2573-04		SW GUIDE A (TACT KNOB)	5		5	5			1 .	5	į.	_1			L	<u> </u>	!
J29-0407-04		SW GUIDE A CTACT KNOBY	-	+-	-	-	4	4	.			_				i	1
J29-0407-04	į	SW GUIDE A (TACT KNOB)	1		1	1	1			1	- 1	- 1			1	1	
J31-0141-04	i	COLEAN	î		ī	1	- 1	1 1		1	- 1	- 1				l _	
142-0442-05	N	HOLE BUSH ACC1	1		1	1	<u>î</u>			1	-	_					
J61-0404-05		FASTNER FOR DC PLUG	6		اة	6	6			6	- !	1				1	
J61-0408-05		VINYL TIE	i °	<b>'</b>	٩l	0		,	1	٦,				1			
	1		+	+-	_			1	+-	1					-	1	
K01-0410-05		HANDLE CASE(B)	1	L	1	1	1							i			
K21-0768-04		MAIN KNOB	1		1	1	1			1	1	ı			ł		_
	N	ROUND KNOB RIT	1_1		1	1	1			1			-				
K23-0776-04		KNOB	1 2		3	3	3			3	ł	l			ĺ.		
K23-0710-04		KNOB UP/DOWN	ं व		2	2	2			2		1		1	100		
K27-0467-04	. No. 1	MAIN TUING KNOB	1 1	ા ે	1 .	11	1			1	_			<u> </u>			
K29-0771-04		KNOB		3	3	3	3			3		7			i	i	1
K29-0741-04	1		1 1		1	1	1			1	1	- 1		1			
K29-0758-04	1	KNOD	1 3		5	5	5		5	5				1	1	L	<u> </u>
K29-3001-04		DAT TONG	<del></del>		5	5		1		5					1	1.	
K29-3032-04	N		s lagai			- 1	- 4			Η.				1: '	i	1	
K29-3032-04	N .	TACT KNOB RIT. TONE	1 1	1		.	}	1 2						1	1	1	
	_ Ľ	1	+-,	1	1 -	1	1	+	1	1					T		
L01-8226-05	N	POWER TRANSFORMER		۱ ۱	1	-	'		•	-	i					İ	
	1		Ι.	.	-	2	2	, .	2	2				1	1	1	
N09-0646-04	1	SCREW M4X4		2	2					1			-	1	1	1	
N16-0040-46		SPRING WASHER	1		1	1				2						1	
N30-2604-46	3 1 1	PAN HO SCREW		2	2	2	€ / Z				* 1		1.50	100	1	1	
		PAN HD SCREW		2	2	2	-			2			<u> </u>	<del></del>	-	+	<del> </del>
N30-3004-46		PAN HD SCREW	-	1			1		1	_			l	1	1		
N30-3010-46	İ	PAN HD SCREW		2	2	2	1 2			2	- 1		ĺ	i	1	i .	
N30-3006-46	į	FLAT HD SCREW		6	6	6	6	الما	6	6			<u> </u>	1	ــــــــــــــــــــــــــــــــــــــ	ــــــــــــــــــــــــــــــــــــــ	
N32-2604-46	1	ILVI OR SCUE										. –					

# PARTS LIST TS-711A/E

<del></del>	Υ				D.	STI	VCTIO	N S	QI	ANTI	ŤΥ				
PART.NO	NOTE	NAME & DESCRIPTION	011	021	022										REFERENCE.NO
132-2606-46	HUIE	FLAT HD SCREW	6			6	6	6			1			1	
432-3004-46	1	FLAT HD SCREW	2			2	2	2				1			
N32-3004-46	İ	FLAT HD SCREW	2	2		2	2	2							
N33-3006-41	<del> </del>	ROUND FLAT SCREW	4	4	4	4	- 4	4							
N33-3006-45		ROUND FLAT SCREW	. 4	- 4	4	4	4	4	100			- 1		- 1	
N35-2604-46	1 /	BIND SCREW	11	.11	11	11	11	11						i	
	<del> </del>	BIND SCREW	18	18	18	18	18	18	_				i		
135-3004-41	1	BIND SCREW	2			2	2	2				- 1	ļ	1	
135-3008-46		TAPPING SCREW	38	38				38			i	1			
187-2605-46	<del></del>	TAPPING SCREW	10	10	10			10	- 7		***				
N87-3006-46	1 :		6			- 6				1.15	1	. !		- 1	
N87-3010-41	1	TAPPING SCREW	3	3		3									
N87-4006-46		TAPPING SCREW	4					4	-		-				
NB7-3006-41	1	TAPPING SCREW	1	1					i	!	! 1			ļ	
N87-4008-46		TAPPING SCREW	2					2		i I				1	
N88-2606-46	<b>_</b>	FLAT TAPPING SCREW	2				2		<del> </del>	-					· · · · · · · · · · · · · · · · · · ·
N88-3006-46	1	FLAT TAPPING SCREW	4		4	4	4	4		1					
N89-3006-45	1	BIND TAPPING SCREW	1 "	"	1 "			<b>"</b>							
	1	-	1	1	1	1	1	1		-	-				
SDT1000F	İ	THERMISTER	1						1	1					
\$29-2409-05	N	VOLTAGE SELECTOR SWITCH	1 1					1 1			;		1		
S31-1415-05	N	SLIDE SWITCH	1								-				
\$40-2450-05	N	PUSH SWITCH	1	2							]				
\$50-1406-05	1	TACT SWTCH (UP DOWN)	1	1	1	1		1	1	1	1				·
559-0428-05	N	KEYBOARD ASS'Y DCS	- 1	+	+		+ -1	+ +		<del> </del>					
	1		1	1	1	1	1	1	1	1			İ		
703-0027-15	1	SPEAKER	1 -	1			1 1	1							
T91-0331-05	1	MICROPHONE (M.W)	+	+ - 1	+			<del></del>		<del> </del>					
T91-0335-05		MICROPHONE (T)		1	1	1			Į.	i			l		
T91-0331-05	1	MICROPHONE (M.W)	١.	1	1		1		1						
T94-0049-05	N	PLANGER	1	1	1	1	1	1 1	-	<del></del>	-				<u>                                     </u>
	1		١.	i .	١.	١.	١.	1	i				1		
W02-0364-00	N	ENCODER ASS'Y	1						1	1		l	1		
W09-0326-05	1	LITHIUM BATTERY	1	1	1 1	1 1	1 - 1	+1			<del> </del>			<del> </del>	
	7	To the second se		1	1	1.	1		1	ļ		ŀ		!	
X41-1580-11	N	SWITCH UNIT	1	1 1	1	1	1	1	I	ĺ	1	!	!		
X41-1580-61	N	SWITCH UNIT	<del> </del>		+	+	1-			<del> </del>	<del></del>	├			
X41-1580-11	į N	SWITCH UNIT	١.		١.	1	1	1		-	-		1		
X43-1490-11	N	AVR UNIT	1				1 -	1 1	1	1	1	1		i	
X44-1620-11	N	RF UNIT	1_1	1 1	1 1		١	+	ļ.—	+	<del> </del>	-	-	<del> </del>	
X44-1620-01	N :	RF UNIT	1	1 :		1	1		1	1			ĺ	}	
X44-1620-11	N	RF UNIT				1.	1 .	1		1	1 /	100	1	1	l control of the cont
X45-1380-11	N	FINAL UNIT	1				1	1	<del>  .</del>	1	-	<del> </del>			<u> </u>
X48-1400-11	N	IF UNIT	1	1	. 1		1		1	ì	1	1	İ	1	
X48-1400-00	N	IF UNIT	1			1	1		1	1	1			1	
X48-1400-11	N	IF UNIT		1	1	1	1	1		!	<u> </u>	<u> </u>	ļ		
X49-1180-00	N.	AF UNIT	1				1	1		1.1	1.	1			La contraction of the contractio
X50-1990-11	N	PLC UNIT	1	1	1		1	183.	100	10.00	1-1	1 - 1 -	100		A STATE OF THE STA
X50-1990-00	N	PLL UNIT	1	1		1 1	1			<u> </u>	<u> </u>	1	ļ		<u> </u>
X50-1990-11	N	PLL UNIT	1	i -	i		1	1	1	1	1	1	1	1	f .
X52-1290-60	N	TONE UNIT	1	;	1	1	. 1	- 1	İ	1	!				<u>k</u> 5
X53-1410-11	N	CONTROL UNIT	1	1 1	. 1	1	. [ .			i		<u> </u>			
X53-1410-11 X53-1410-21	- N	CONTROL UNIT	1	1	1	1		T	17.7	1		1			
	N	CONTROL UNIT	1	13.		1 1	de c		11	1.	1		1.0		La transfer and the second sec
X53-1410-51		CONTROL UNIT	1.00	100	3.6	4 7	1	1.5		.1	1.	i			15
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X53-1410-61	N_			i i		1	1	1				i	!	ì	1
X53-1410-61 X53-1410-21 X54-1820-11	N N	CONTROL UNIT DISPLAY UNIT	1		1	1	1	1				İ		ĺ	

CMUTCH UNIT	/V44 4500 VV	1 11 . K M	1 M2 Y	-61 · T W
CIVILL FULLINIS	/ V / 1.1690. Y Y	I I TI ' K IVI	I IVIZ A	-O1 : 1.VV

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PART.NO	NOTE		011												REFERENCE.NO
91-0757-05	14012	CERAMIC 0.001 50V	5	5			1	1		1	i				C , 1, 2, 3, 4, 7
91-0757-05		CERAMIC 0.001 50V			7						l				
06-1351-05	N	ROUND TYPE CONNECTOR 13P	1 2 1	1 2	100	90	10	ġ.	4 5		1,3%				
E40-5041-05		MINI CONNECTOR SP		. 4	1111111	1.	10 ON	17.	w 550	T- 4:	1.00	0.5	12,17,		
E40-5042-05	N.±	MINI CONNECTOR 8P	. 1	1			10.00					-	-	-	
E40-5043-05	N×	MINI CONNECTOR 12P	1	1	i	i			1	1			i		
E40-0273-05		MINI CONNECTOR 2P	1 1	1		Į.	-		1	l	i				
	;	MINI CONNECTOR 5P	1 1	1	1				i	1	-		i		
E40-0573-05		MINI CONNECTOR 6P	2	. 2			1.7	7.7			1				
E40-0673-05	*		4	1	11.3	15.03	1	100	100	1	100	125	S 4	1.00	
E40-0873-05	*	MINI CONNECTOR 8P	1	1				For ell			1		Line.		<ul> <li>A substitution of the control of the c</li></ul>
E40-0973-05		MINI CONNECTOR 9P	1			-		-		-	<del> </del>	<del> </del>	-		
E40-1373-05	*	MINI CONNECTOR 13P				ļ		1		i					_
S14AB3A100J		METAL FILM 10 OHM 1W	1	1	<del> </del>		-								R , 3
640-2440-15		PUSH SW	4	4						1				4	S . 3. 10. 11. 12 S . 4
340-2441-15	ì	PUSH SW						-					-		
\$50-2402-05		TACT SWITCH	2	2				1	i	1					
550~1412-05		TACT SWITCH	5	1	}		1	l	1	I	i i	l	1		
\$50-1412-05		TACT SWITCH	<del> </del>	4		-	- :						-		S , 1, 2, 7, 9
102-0365-05	N	ROTARY ENCODER(RIT)	1				- 1								D . 1. 2. 3. 4. 5. 6.
ISS 133		DIODE	8	8											D , 1, 2, 3, 4, 5, 6,
	1							14.		-					
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# TS-711A/E PARTS LIST

*********		1490-11)			D I	STIN	0170	N &	QU	ANTI	TY,				0.		ICE.N	,		
PART.NO	NOTE	NAME & DESCRIPTION	011												C	PEREI	CE . N	12,	20	
E04W1C100M	74016	ELECTRO 10 16V	4				-	- 1		i	1	- 1				. 10	,,	167	20	
E04W1C101M		ELECTRO 100 16V	1					j	- 1			- 1					7.	11.	14. 1	5, 17, 1
K45B1H102K	ļ	CERAMIC 1000P 50V	10	1								<del></del>			<u> </u>	-37	25,	26	*	<del>,,,,,,,</del>
KADBIRIUEK	+						120					3.4					2	20	11. 17	
90-2004-05	N.	ELECTRO 15000 25V	2	100				98.00	. 1			/		1977	Ç.	, 3				
		ELECTRO 1000 25V	2					2					38 .							
90-2005-05		ELECTRO 1000 16V	1					i			- 1					, 22		. 37		
90-0817-05	1	ELECTRO 470 16V	3	d .			. 1		- 1		- 1	İ					21,	. 23		
90-0820-05	1	CERAMIC 0.01 50V	1	1	l				1	i	i					, 16				
91-0117-05	-	CERAMIC 0.022 50V	1	4.00	847-7	later.				14486		8.54	1.04			, 13			- 199	
91-1008-05		CERAMIC 0.047 50V	1 3	. Long										12.00	C	, 6	g recording			3. 50.20
91-0119-05		CERAMIC	1.0				50.00			10.1		100	100	1.00	- 22					
	1		1 1	-										1	G	, 12				
TC114ES		DIGITAL TR	1 1			ł	1 :							i '						
	1	WANT CONNECTOR TR	1 4	i	1	1														
08-0373-05	*	MINI CONNECTOR 3P		1000	100	100	1000	7.7	100	320.	27.		904	100	7.5.	7 T		· * .		See Section
31-3063-05	*	INSIDE CONNECTING WIRE	1		1380	13 14	100		400	10.00	A	22.5	. 4	1800						
40-5044-05	N*	MINI CONNECTOR 2P			1960	<b>1</b> 000	la Provi	100	9,77	1.07	MAR.	7 - 1	1	EL.	1 1 1	1 2 2		2.12		
40-5045-05	N×.	MINI CONNECTOR 6P		2	-		+				-									
40-0273-05		MINI CONNECTOR 2P					İ					i		1						
E40-0473-05	*	MINI CONNECTOR 4P			1			ł		Ì		!		1						
£40-0673-05		MINI CONNECTOR 6P			+		1000			100	3777	100	700	7 1		7.5	1.5			
40-0773-05		MINI CONNECTOR 7P		1000	1000		护文		100	100	12.5	126	15. 5	100	100			200	,	
40-0973-05	*	MINI CONNECTOR 9P			1000	100	100	100		1.5	0.53%	1 100		1 ♀	2.0					
					-	-	+				1	<del></del>	<del> </del>	<u> </u>						
20-0078-05		INSULATING PLATE		2	1	1	i	į		1	İ	i		1						
29-0014-05	1	INSULATING WASHER		2	i	1	1	ļ	1	ļ		1	Í							
					ļ	1	1	<del>                                     </del>			1	<del> </del>		100	-					
13-0055-05	1	FUSE HOLDER		2	1.399	1		10.5		10.00			1.30	100	130					
19-0306-05	1 .	HOLDER		ı	M.C	1000	1	135	100	1000	100		1 4	100	100					
119-0300 03	1		-	1	-		1.7	<u>!</u>		<b>├</b> ──			<u> </u>	+	-	, 1	, 2			
15-0016-05	+	LOW-FREQUENCY COIL		2	1	1	į	l .		ĺ	İ	1	İ	į		′ '	, .			
F13-0010-03	1					1	1	1	1		i	ŀ	İ	i	D	, ,				
MTZ6.2J(A,B)	1	ZENER DIODE 6.2V		1 !	<u> </u>		-	!	ــــــــــــــــــــــــــــــــــــــ	ļ			<u> </u>	+	D .					
MTZ8.2J(B.C)		ZENER DIODE 8.2V	T	1	Ţ.,	1	1	] .	1	1 .:	1	1		1	10	· .		24		
4170.51(0)()				100	100		1 4	1	1	1	1	1	1 1	1	a	, 10				1000
NJM45585		lic .		1	1	1		ļ	ļ	ļ		ļ	-	<del></del>	<del>  "</del>	- 1				
NJ:143303		1.		- T	T	T	i	İ	i	1		i	-	İ	VR	, :				
R12-1429-05	i	TRIM.POT. 500 OHM		1	1	ļ		1	1	İ	1	1	ļ	1	VR	<i>:</i> :				
	1	TRIM.POT. 1K OHM		1		i	i	<u> </u>	1		ļ		٠				. 17			
R12-1428-05 R92-0674-05	- N	RESISTOR BLOCK 10 OHM 2W		2	1300	1.00	1000	100	100	1300	100	1		1	R.	× 10	. 17			
892-06/4-05	1 14	WESTSTON SECTION	' l'a		J 03.	13.5	100	100	Fra.		10.0	1200	197	16.		1 a 1				
	1	RESISTOR BLOCK	.   "	1	100		100	L		100	1.11	1	1		D		.'			
S10VB20	_	TRESTSTON DEGGN	-			1	1	1		ļ	i	1	1	1	1_					
		ic		1		l.	1	1	1	1	1	1	İ		G	, :				
UPC78MO8H	1	DIODE	ſ	1	1		1	1	1		!	1	1		D	-	<u> </u>			
U05B		DIOVE	74 % 79	1 28	1 1 2 3	1000	100	200			10.0	120	1:44	43.0	1. 1	4 (				
	.	VARISTOR	40	1	dad)			187		100	10.00	The first	Lin	F. J.	0				200	
VD1223				2	38.8	400	100	1000	180	T.	King or	1	1	100	j D_	,	2, 3			
V06B		0100E	_		7		1		1		1	,	1	1	1					
		Invent		2	1	ļ		1	į		1	i	1		D	,	3, 9			
188133	1	DIODE	1	- 1				1	)	i .	i	<u>L</u> .	i		1					
		<u> </u>		2	100	200	1		1	1	15	1 72	(S. )		Q		. 5	3 3 7	s - 17	the grant of
2SA1012(Y)		TR CONTRACTOR OF THE STATE OF T	Jak	1	4, 6,	1	N. Se	1.50	123	153	130	100	J. O	355	Q		7			a Haranji
2SA1048(Y)		TR		3	100	1122	1000	4000	1800	100		156	100	취임공	Q		9			
28C1959(Y)	1 10	TR	+-	3	+	1000		-	<del></del>	1-	1	1	1		Q	,	3, 4	, 6		
2SC245B(Y)	T	TR	1	٦	1	1	1		İ	ì		1	k .	-	1					

PART.NO	NOTE	MAINE & SECOND	001			-									Ċ	, 4	0
CC45CH1HOR5C	1	CERAMIC 0.5P 50V	1	1		i	ļ		i			ļ			č		7, 28
CC45CH1H12OJ	Į.	CERAMIC 12P 50V	2		!	į.	:		i		İ				č	, 2	
CC45CH1H12OJ	1	CERAMIC 12P 50V		1	į											<del></del> 5	
	+	CERAMIC 8P 50V	1	1	10.34	600	100		M I	88.H)		800	(* - XI		Ċ	د ٍ ر	8, 56
CC45CH1H080D	1	CERAMIC 15P 50V	. 2	2	1000	F		17.48	4,500	1.300		0.00	20				
CC45CH1H150J	1 1	CERAMIC 10P 50V	4	1.9.1	100			1001		28.40	901.4		3.600		<u>c</u>		2, 23, 24, 49
CC45CH1H100D	ļ	CERRITO		1	1	1	1							- 1	C	, 1	
CC45CH1H100D	1	CERAMIZO	1	1			1							ĺ	С	, 4	
CC45CH1H22OJ		CERANIC	4	4	1		!	1 '	- 1						С		4, 20, 21, 22
CC45CH1H330J		CERANIZO	1	- 1	1	100		77.0		11.7	117.7	27. 3			C	, :	1, 47
CC45SL1H101J	1	CERROLE				2.50	100	200	3500		30.0	100			C		9, 36
CC45CH1H010C	100	CERAMIC 1P 50V	2	1	1	1000	13.77			d		37.837	13.7	X (1)	C	,	9
CC45CH1H01OC		CERAMIC 1P 50V			منا	-	-	-							Ċ	, 3	7, 41
CC45CH1H02OC		CERAMIC 2P 50V	2	2			1	ł			]	,		1	Č	. 1	0, 34
CC45CH1H030C		CERAMIC 3P 50V	2	2		1	1		1		1				č	, 1	
CC45CH1H060D	1	CERAMIC 6P 50V	1	1		٠		-					-		č		3, 42
CC45CH1H080D	1	CERAMIC 8P 50V	2	2			1.00	1. 50	8.53		1.0	18.	2872	er from	č	, 3	
CC73ECH1H070D	11.55	CHIP CAP. 7P 50V	1 1	1		120.0	1000	12. 7	1.2		1 6.1	100		200	č	, 5	
	1 1	ELECTRO 10 16V		1			1000			1 1		-				<u> </u>	7, 29, 35, 43, 55
CEO4W1C100M	+	CHIP CAP. 1000P 50V	. 5	5			1						į	. 1	C		
CK73EB1H102K	1	TRIMMER 20P	1	1	ŧ	1	1	[			1		l	i			2
CO5-0030-15	1	TRIMMER 10P	1	1			1	1			L		L		TC		1
CO5-0031-15	-	TRIMMER 10"		-	177	1 .5	1	A 15.		1.1			1000	93.4			
E04-0154-05		RF COAX. CONNECTOR RA.HET.DO	3	3													
	+	TUNING COIL	1						1		i	1	;		<u>L</u>	- 1	
L31-0180-05	ł	TUNING COIL	2	į 2				!	ļ j	1		1	i		L		6, 17
L31-0267-05	1	TUNING COIL	' 1	1	-	1		1			<u> </u>				<u> </u>	<u>, 1</u>	
L34-0886-05	+	TUNING COIL	1	1	1 10 10	11.4%		200	Q (60)			F 18	100	A	١.,	,	
L34-2035-05			3	3	100	laser.	Trans.	1000	P					4.65	L		3, 5, 10
L34-2038-05	1.00	TUNING COIL 3 4T	2	2				18 10	1000	0.77		100	199	524	٤		9, 21
L34-0893-05	1	COIC	2	2		_	1		1		T				L		8, 20
L34-0894-05	1	10016	1	1		ł		1	1		1	l			Ļ	, 1	
L34-0908-05	1		1	1		į.	1			1	1	ì			L	, 2	2
L40-1092-14		111000101					+	<del> </del>		-	1.				L	,	7, 8
L40-1011-14		INDUCTOR 100 UH	2 1			10000	13.00	1.70		1000	103	Mari	31.5			, 2	
L40-4711-13	1 2	INDUCTOR: 470 UH	1	1			4200	1500	1.3	Mar.	1800	130		100	L	, 2	
L40-1001-13	1	INDUCTOR 10 UH	-	1 1		-	+	1			<del></del>		<del></del>		1		9
L40-1091-03		INDUCTOR 1 UH	1			1	1				1		i		Ĺ	,	4
L71-0248-05	N	MCF 30.265MHZ	1	1	.		1			1	1	i	1		ī		1
179-0642-05	N	HELICAL BLOCK	1	<u> </u>	<del></del>			1	į.	ļ	<del>,</del>	ļ	<del> </del>	<del></del>	1	<del></del>	<del></del>
L79-0643-05	N N	HELICAL BLOCK	700	1	4. 3	u e	Test.	1.		0.0	<b>₩</b> 30	100	1.000	1000	Ļ		2
L79-0643-05	1. "	HERICAL	1	(C)	100		Table 1	150	ter i i	F.	100	100			-	,	2
	T.	HELICAL		1		100	4	100	1000	1000	1	-	1		<u> </u>		<u> </u>
L79-0499-05	+	THE COURT OF THE C								1	1	i	1	1			
MA856		DIODE	2	7	!					ļ		1	L		D		1, 2
\$51-1420-05	1	RELAY	1	1			100	Jan W		N.	100		100	1	KL	1.	스타를 하는 사람들이 없다.
331-1450-03	1			18.00	1			100	1435		1000	Marine 1			D		
188133	1	DIODE	1		_	1	1,000	1000		130	1	-	+-	1	5		8
	<del>-  </del>	DIODE	1				1		1	1	1		1	Į.	۵	,	
188133	1	DIDE	5	1 :	5			1	1		1	1	ì	ļ	U	,	3, 4, 5, 6, 7
1SV123	1	01000		1	1	$\perp$	L		<u> </u>	<u></u>		<u> </u>	ļ	ļ			
	+	TR THE PROPERTY OF THE PROPERT	1	1	1.00	11.30	198	10	100,000	100	150	Health.		14 14	Q		6
2\$C2538-22-A	100		2			1	ale		1000	lake.	167	W 5	100	1	6	10	3, 4
25K192A(GR) *N	41 1	FET	MOT.	Pail	450			1.35	1000	100			1	1,320	100		
	1.		+	ring		+	-	-	+	+	_		Т-	T	Q	,	1

RF UNIT (X44-1620-XX) (-01 : T,W -11 : K,M1,M2,X)

# PARTS LIST TS-711A/E

NALUNII	184	5-1380-11)			Ď	ISTIN	CTI	) N	8 Q	UANT	TITY					REFERENCE.NO
	NOTE	NAME & DESCRIPTION	011						<u> </u>	├-	+-	+-	+		- t c	, 6
PART NO	NO I	CERAMIC 0.5P 50V	1 2	l		1				İ	-	į		- 1	ļ	
45CH1H0R5C		CERAMIC 1P 30V	1	1		İ		ļ	1	1 .					0	
	ŧ	CERAMIC 18P 50V			<del></del>	+	200		1		914.7				0	그 그 살이 가득 그 때가 얼룩하다 그 가지 않는 것 같은 것이다. 그 것이다.
45CH1H180J	<del> </del>	CEPAMIC 6P 500V	1 2		had.	13×4					1.5	$^{\circ}$			(	
455L2H060D	1 :	CEDAMIC 10P 500V			10.00	1 1			100	1				11.0		
C455L2H100D	100	CERAMIC 22P 500V	5		-	+	-			+	-			_		, 23
C455L2H22OJ	<del></del>	ELECTRO 22 16V	1		ļ	1		1	1		1		- 1		- 10	
E04W1C220M	1		1		1		1	1			1		i	1	- 10	
E04W1C101M	1	ELECTRO I TEN	_1		1	<del> </del>	ļ.,	·	+	+						, 29, 30
S15E1VR47M	1	TANTACOTT 14V	. 2	1	le 51	1.000	100		200	Alcohol .		E 18	4.3	4.0	C210	. 13
90-0871-05		ELECTRO	1	184		1100	12.00		4					334	87 H	C , 28
90-0838-05	1.0	ELECIRU	1		100	15.0		1/2/			-	-+-	-+	-	-+	i
90-0861-05	ţ.	ELECTRO 22 16V			T		1	1	1	1	ļ	1		- 1	- !	
/ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			1	1			l	1		1	ì	- 1	1	- 1	I	
04-0161-05	ĺ N	UHF RECEPTACLE	1 4			1	1	1						<del></del>		
29-0440-14		GND WAFER	1	-	+	1			4.0				100		1	네 이 얼마나 없는 어느를 들지 않는 것 같아.
31-2061-05	+	LIUMPER WIRE DO			1	410		3 51.	olâ. :			1	1. Sel.	0.83	43	· 영영 프로마트 아프로 레스트리 - 1880 하기 - 12 -
	1	WIRE WITH CONNEFAN	1 . '	1	1.		1500	에 그	. 177	. 1 %	. 1.	-1		100		
31-3061-05	1 -	12.00	+	-		+		+	-	_	_				- 1	
0.05.71		FAN		1	1	1	1		1	- (		ļ			- 1	
09-0405-34	1	INSULATING PLATE		1	1		1	- 1	i	1		- 1	- 1		1	
20-0078-05		INSULATING WASHER	1-	1				-			-					[[[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [
29-0014-05		INSULATING WASHEN			1.		1.0		يا بالـــــــــــــــــــــــــــــــــــ	v   83	ai le		100	A 22 A		
	1	SPRING FOR MOTOR	1.00	1		.44	132	. 1 4.	100	7	No. 18		2000 P	7.75	250	
302-0549-04	N	SPRING FOR MOTOR	1 .		1				-			-				L , 4, 6
	_!	WHE COIL 3 6T	1	2		i	- 1	l.	1	ļ	- 1			- 1		L , 9
34-0452-05		AHE COIL	1	1	1	!	-	- [	i i		- 1		Į.	-		ī , 3
134-0823-05		TVHF CUIL >		1	i	l.	1									L , 2, 5
L34-0894-05		TODIE -		2	-	-		100			- 4	. 1	1. 1.	. 1		
L34-0908-05		COIL 3 9.5T		1	· F	. 1	el 8:	V. 18.	1.4.3		. ee   6	1.5	200	41.94	74.0	FER CAR A DECEMBER OF THE PROPERTY OF THE PROP
	1 '	cott. 3 2.51		1	. P.		1 13		>   Pr						L	<del>                                    </del>
L34-1019-05	1	INDUCTOR 1 UH			+		-		-							L , 8 .
L40-1092-14		INDUCTOR 1 UH	-	1		1	1	i	- 1	- 1	- 1	i			1	_
L40-1092-16	- 1	1400010	1	. ]		- 1	- i	- [	ì	- 1	i	1				D , 2
	1	DIODE		1		_			21 -	-	-		100		7.7	D . 1
MI308		DIODE		1	4 3	- 13								1.7	13.7	Q . 1
MI407		POWER MODULE	1	1		- List	9 1	-	. 1.		- 1		100		100	
M57727		POWER MODULE		_1:_						-+			_			
			_	1	- 1	- 1	1	1	- 1						1	
N14-0509-05		NUT	1	- 1	1		- 1	- 1	- 1	- 1	- 1		1	1	1	VR , 2
	- 1	TRIM POT . 100 OHM	i	1										-		TVR , 1
R12-0541-05	- 1	TRILLIA GALL		1			1.3							1	1	
R12-5517-05		TRIM.POT. 100 OHM		· 15.	9.) :	. I .	9 H.	2012		O In	. No. 1		1	1	1 -	TH 1 1
KIZ-JJI. V				4	- : F -	- L	5 12		3 L		- 1		_	-	-	in . Z
SDT1000F		THERMISTER									- 1		i	1	1	1
50110001	_+-		- 1	1	i		1	1			- 1		i	1	1	
		DC MOTOR		1		1	į.	- 1	ĺ	- 1	1		1 _	i		
T42-0302-05	1	1						लाम हि		7.5				To be	400	0 , 3
		DIODE		1	. 7 6	100	4.0	92 6			9	5.7	1(5)	1:	100	D 4, 5, 6, 7
188101		DIODE	100	4					3		100		180		460	
151587	1	DIOVE			4	ناند	200	-					+	1		Q , 2
l				1				- 1			ì		1	1	1	Q , 4
25A1012(Y)	i	TR		1			- 1		- 1	- 1	į		]	1	1	Q / 3
25A1048(Y)		TR	1	1									1 27	+	+	Q > 5
2SC1815(Y)		TR		1			715			₩.	46.1	1	100	1.20		네트님, 기를 শ기 열리는 이 나를 보는 것
250717(0.Y)	. N	TR. Tr. Tr. See an diagram	371		1 P	S 1			84 F		.250	100	13.	12		
		기 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그					:- <u> </u>			0		1	1	4:-	+	
1	- 1		-+		_			ì		T			1	Ĺ	1	
				ļ	1		-	i		ļ		1		1		
i	l			1	- (	- 1	- 1	- 1	- 1	- 1		1	1	1	_!	

: 1 INIT (X48	3-14(	00-XX) (-00	: 1,44	- 1 1 . 10,		<u>/</u>		· .	STIN	CTIO	N 8	GU	ANTI	ŤΥ				
Olili (XXXX					L.	00 00	04.10	14 4 1	SILN	CT.U			1					REFERENCE.NO C , 52, 57, 90,121,190
	NOTE	NAME &	DESCRIP	TION	- 100	5 0	0110	5										
PART.NO	NUIE	CERAMIC	15P	50V	- 1	3		3	- 1		1	- 1	i	1	1	i		
C45CH1H150J		CERAMIC	22P	50V			- 1	1	.	- 1		- 1	į.					C ,119 C ,69,106,107
C45SL1H22OJ		CERAMIC	10P	50V		1	-+-	3			97.	100		1 504	V - 1	10.11		c , 69,106,10/
C45CH1H100D		CERAMIC	479	50V	. } .	3	2.15	2	83.64	1 / 4	1 ( Table	34	100	0.00	eli ist	9.75		C 7, 31
C45SL1H470J	1	CERAMIC	0.5P	50V	1.	2	- 14	1	1	2 10	15.7	255				20 1		c . 18
C45CH1HOR5C	1	CERAMIC	18P	50V		1												C ,165
C45CH1H180J		CERAMIC	120P	50V	- 1	1	- 1	1		ĺ			į !	1	- 1			c .114
C45SL1H121J		CERAMIC	228	50V	1	1		1							- 1	1	- 1	C , 8,115
C45CH1H2ZOJ	1		0.5P	50V		2		2						7.77				C ,122
C45CH1H0R5C	J	CERAMIC	47P	500V	1.5	1	- 3 1:	1			100	100	988a	100	0.41		5.7%	c , 37
C455L2H470J	1 .	CERAMIC	33P	50V	10			1	[223]		1000			27.5			·	C 103
C45CH1H33OJ	1	CERAMIC	2P	50V	100	1	- 1	1		200 .4		-						C , 3, 37
C45CH1H020C		CERAMIC	33P	50V		2			1		1	Į.	i	1 1	1	ļ	- 1	C , 3, 37
C45CH1H330J		CERAMIC	33P	50V	- 1	- 1	- 1	1	١ ١			1	1		1	1		C , 92
C45CH1H330J	1	CERAMIC	33P 3P	50V	1	1	- 1	_ 1			1	-	1					C , 15
C45CH1H030C	1	CERAMIC	3P 120P	50V	-	-1		1					1	i	1	. 1		C . 32, 65
C45CH1H121J		CERAMIC		50V		2	1	. 2	1	1.7	100	1	10.20					C 64,101,108,126
C45CH1H050C		CERAMIC	5 P	50V 50V		4		4			1	1.00						C , 16
C45SL1H470J	1 -	CERAMIC	47P	50V	-+	1	-+	1	1								1	c . 30. 91
C45SL1H221J	-+	CERAMIC	220P		- 1	2	ì	2		1	1	i	1	1			1	C , 19, 24, 25, 48, 61, 74,
	i	CERAMIC	7 P	50V	1	7		7		l	1	1	l _	L				
C45CH1H070D		CERAMIC	10P	50V		1		1		7	-			1	} ·			
C45CH1H100D		CERAMIC	2 P	50V	1		1	1		100	1.87	1	13.7	1.5		n i s		c , 13 c , 38, 77, 80, 82, 83,157,
C45UJ1H020C		CERAMIC	10P	. 50V		1	i			755	1 .	1 24	100				100	C , 38, 77, 80, 82, 83,1377
C45UJ1H100D		ELECTRO	1	50V		-9			-	+	+	+	+					,172,174 C ,11, 38, 77, 80, 82, 83,
E04W1H010M	_	ELECTRO			- 1	- 1	1		.}	1	1	1	-	ì	İ			C , 11, 38, 7/, 80, 62, 63,
	i	ELECTRO	1	50V	- 1			10	1	1		1		ì	ļ		1	,163,172,174
E04W1H010M	1	ELECIKO	-						<del></del>	1	+	+	1	+			100	C ,187
			2.2	50V		1		1			1.50	1 1 10	11.2	100	18 S. A.			C . 81,155,162,181,182,188
EO4W1H2R2M		ELECTRO	4.7	25V		6	10.0	- 6		1.7.2	1	435			1.3	1	F	C , 99,130,173
EO4W1E4R7M		ELECTRO	10	16V	- 1	3	1.1	3				11 12			1			C ,180
E04W1C100M	1.55	ELECTRO		167		1		1			1	1	1	!	1	1	l	C , 79,171,183
EO4W1C220M		ELECTRO	22	100	- 1	3		3	5	1		-	1			1	1	C .182
E 04W1A470M		ELECTRO	47	107	- 1	1		1	L İ	i	i	<u> </u>		1	1	ļ		C ,131
E04W1A221M		ELECTRO	220_			-1		1							1.	Sec. 15	100	
K4581H331K	_	CERAMIC	330P	50V	1 1	1							110	i kani			1	
	- J 🦪	CERAMIC	470P	50V	- : 1	8	11,500	1 6	3	100		1.5						140
K4581H471K		CERAMIC	1000P	50V				₩,		+					T	i .	1	
K 4581H102K		- COMMITTEE			1	_ 1		١.	2	1	1	1	l.	ı	1	1		c , 70, 87
	İ	CERAMIC	330P	50V	1	2		1 '	٠1			-	-	ì	1	į.	1	c , 47,110,153,177
CK 4581H331K	1	CERAMIC	470P	50V		4		ļ.,	_	-		+	-			7	T i	C . 47,110,145,153,177
CK 45B1H471K		CERAMIC	470P	50V				1 3	5		. I	2 2		1,355		1 6	10.00	C 6, 23, 45, 98,136,145,
CK 4581H471K	i		1000F	50V		12	di.	100	100					476		1.0		,159,168,186,189,193
CK 4581H102K	1	CERAMIC			1	- 1	111	1	_	100		-				+	_	C , 6, 23, 45, 98,136,156,
			1000	50V				1	1	1	1		1	1	1	1	1	,168,186,189,193
CK4581H102K		CERAMIC	1000.		1			1		1		i i	- 1	1	1		1	. 88
	1			50V	- 1	1	Ì	1	1					_	-	<del>-  </del>	-	C . 29, 43, 85, 89,138,144
CK45F1H103Z		CERAMIC	0.01	50V		6		1.00	6			5 85		100		100	16.27	c 175
CK45F1H103Z		CERAMIC	0.01			1	18.5		1				5 (\$\disp\)			1	1	C /176
CQ 92M1H332K		MYLAR	3300	50V	White.	ંવા	13.3	100	1	100	3.120			~ ~ ~			112.0	C .160
CQ 92M1H103K	1.	MYLAR	0.01			1	-	+	1	_					ì			
CQ 92M1H103K		MYLAR	0.01			1	1		il				1			1	1	
		MYLAR	0.02			1 2	ĺ		2	1	l		l	1	1			
CQ92M1H223K		MYLAR	0.04				-		2	-		231 34						C ,166,170
CQ 92M1H473K		MYLAR	0.06	8 50V		2	1.00		2							1		C ,178,191
CQ92M1H683K		TANTALUM	0.1	35V	275	2	1300	(1)登	5 1 S					4124		1		C , 39
CS15E1VOR1M	1.15	TANTALUM	0.47	35V	A 1994	1	1	4		+		+			$\neg$			C , 71,133
CS15E1VR47M		TANTALUM	1	257		2		ì	2				1	1	1	1	1	c , 44
CS15E1E010M	1		2.2	16V		1	1	1	1	i	1	- 1	i		- 1			TC , 2
CS15E1C2R2M	- 1	TANTALUM	20P			1	L		1									

# TS-711A/E PARTS LIST

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PART.NO	NOTE	NAME & DESCRIPTION		001										<u> </u>		REFERENCE.NO
C05-0031-15		TRIMMER 10P	2		2	Ī			1							, 1, 3
C91-0667-05	1	CERAMIC 0.0047 50V	1		1						.				C	167
C91-0117-05	Ì	CERAMIC 0.01 50V	1 6		6										C	, 2, 10, 17, 67,112,137
091-1008-05		CERAMIC 0.022 50V	11	. 7	11		11.52	200		100	noon!	2,50		1.04	C	, 33, 49, 56, 62, 63,102,12
0,1 1000 03						1000	2001		1 80x 1	400.5		5-10-51	100	1. 6.	ŀ	,125,146,149,150
091-0117-05		CERAMIC 0.01 SOV	12	100	12	1 .	0.00	1,51	100	. 60	1964	1	100	1	C	. 26, 27, 35, 36, 46, 68, 8
671-0111-03		OCHANICA TO THE PARTY OF THE PA							_						Ì	,111,116,117,139,154
C91-1008-05	į	CERAMIC 0.022 50V	32	İ	32	ĺ			i					1	C	, 20, 21, 22, 34, 50, 53, 5
(41-1009-05		CENAMIC 010EE 501	1			1								1		, 55, 58, 60, 72, 73, 75, 7
			-	<del></del>	-	-	1									, 84, 93, 95, 96,100,104
		CERAMIC 0.022 50V		100	1000	1.00	91. 1	88 J.	1000	days.			1.11		C.	,105,127,128,129,132,134,14
091-1008-05		CERAMIC 0.022 307				200	100		1 10	1.0				1		,143,147,148,151,158
504 0440 05		CERAMIC 0.047 SOV	3	-	. 3	<del> </del>									C	,109,113,142
C91-0119-05		CENANTE CONTRACTOR	2		Z			1						1	C	, 28, 66
C91-0457-05		CERAMIC 0.022 50V	4		4	i	i		ļ		i i	i	;	1	c	, 51, 59,120,124
C91-0457-05		0 2	1	1: -	1	1	<del> </del>	-	1	_				1.1	C	,192
091-0085-05	N		2		ž	1	100		1					1	Ċ	164,184
C91-0667-05			-	1	1		1	i				ł	į.	1 :	C	, 40
091-0119-05		CERAMIC 0.047 25V			+	<del> </del>	-							<b></b>	+	
DTC114ES		DIGITAL TR	1		1								i		Q	, 19
VIG11463			<u> </u>	1			l					L	<u> </u>		<u> </u>	
E04-0154-05		RF COAX. CONNECTOR RA, HET, DO			2			7					ŀ		1	
E23-0512-05		TERMINAL 1P	4		- 4	1	ŀ		l	- 1	٠.		ļ	11.		•
E40-0273-05	*	MINI CONNECTOR 2P	6	1.	. 6	1			400	1.			<u> </u>		<u> </u>	
E40-0473-05	*	MINI CONNECTOR 4P	1		1	1			-			i	į	1	i	
E40-0573-05		MINI CONNECTOR SP	4		4	i	1	İ	i	i i	i	l	i		1	
£40-0673-05		MINI CONNECTOR 6P	1 1		1	1	1	ļ		•			1	1		
E40-0773-05		MINI CONNECTOR 7P	1		1	1	-	1		1		,		1	1.	
E40-0973-05	1	MINI CONNECTOR 9P	2	1	2		1	1	1 - 500	100			100	1: -	10	
240-09/3-03	1	MINI CONTECTION X	[ -	ŀ					100					!		
602-0535-04			2		2	ĺ	T							1		
			1 4	1	4			ļ		ĺ		l		!		, 13, 14, 15, 18
L30-0281-15		IFT	5			+	<b>├</b>				-		<del> </del>	+	Ĺ	, 6, 7, 20, 21, 22
L30-0289-05	i	1 F T	3		5		1		1		;		1	İ	1	, 25, 27, 33
L30-0503-05		IFT	1	1	1	1	1		1		1			ĺ	Ē	, 32
L30-0504-05		IFT		┼		<del></del>		<del>}</del>	+		-	<del></del>		<del> </del>	L	, 5
L33-0681-05	; N	CHOKE COIL 6.8 UH	1		1		i		1	ł		i		1	ī	, 8
L34-2231-05	, N	TUNING COIL 30MHZ	1 4		1 4		1		1	1	1	i		ļ	1,	, 9, 10, 11, 24
L34-2038-05		TUNING COIL					<del></del>		<del></del>	ــــــــــــــــــــــــــــــــــــــ	<del> </del>		<del> </del>	<del>,</del>	1	. 10 2. 3
134-2041-05	Ī	TUNING COIL	3		3		100		1.3	1	Li n	1	1	180	1	23, 28, 29
_34-2045-05		TUNING COIL	3		3		1	1.2		10		100		15		, 26
L40-1501-03	!	INDUCTOR 15 UH	1		1		1	-	12.17		-	<b>├</b> ──		+	iL.	, 17, 19
140-1511-03	1	INDUCTOR 150 UH	2		2		1	İ	1	1	1		1			
140-1021-03		INDUCTOR 1 MH	3		3		1		i	į	ł				1	, 16, 35, 36 , 38
40-1011-16		INDUCTOR 100 UH	1 1		1 1		J	ļ			-			1	4	
L40-1011-17	1	INDUCTOR 100 UH	1		1		1	25	1000	100	F W	100	175	1.0	L	, 30
L71-0249-05	N	XTAL FILTER 10F22S	1		1		1	1.5	12	100	100	1	1000	1.	İL	, 12
12-0342-05		CERAMIC FILTER CFV455F	1		1		1					l	:	1 "	ĮL.	, 31
L77-1254-05	N	XTAL 13.6570MHZ	1		1		1	1				•	İ	İ	L	, 4
L79-0446-05	1	CERAMIC DISCRI CFY455S	1	ì	1		1	1					İ		L	, 34
			2	<del> </del>	2	<del> </del>	+	-	+	<del> </del>		-	<del> </del>	1	0	, 27, 28
MC911	-	DIODE	5				H.	1	1	(A. C.)	1000	P	100	45.0		9, 24, 29, 32, 38
MC931	-	DIODE	۱ ،	Tir .	5	Ref.	JA .	Jij is	1	1 8		þr 👸	10.00	100	1	
ND487C1-3R		DIODE	1	1	1	+	+	-	<del>                                     </del>	-	-	<del>-</del>	+		D	, 16
ND48/LI-3K	i	01000	1 -	1	1 -	1	1	1	i	i	i	1	1	1		•
													1			, 8

						ISTI	NCTI	ON	8 0	UANT	ΞŤΥ				4						
PART.NO	NOTE	NAME & DESCRIPTION	000	001					Ι				1				ICE.	90			
R12-1429-05	11012	TRIM.POT. 500 OHM	1		1		П				i			į	VR .						
R12-1430-05		TRIM.POT. 3K OHM	1	1	1 1		1				ļ				VR VR		,	7			
R12-3443-05		TRIM.POT. 10K OHM	3		3				ļ.,	<del> </del>				-	VR			<u> </u>			
112-3450-05	, N	TRIM.POT. 20K OHM	1		1 2		7			-	37.95				VR.	· 4	. 5				
R12-7408-05	, N	TRIM.POT. 500KOHM			- 2	100			10 mg	100	3. 14	A 44		-3 3	1						
A7302P		10	2		2								ĺ	l I	"	41.	. 44				
PC577H(E,F)		1 C	1	-	1	ļ.,	-						4.47			46					
PC4558C		IC Services			4								W. 5	12.00	1		. 11	. 12	, 13		
N60		DIODE	4				ļ		-		-			-	6	10,		18	- 30	, 33,	- 30
SS133 SS133		DIODE	17		6 17							!			0 .	2.	. 4,	, 6	, 7	. 8,	15,
	-			T:-		1	-	-	-						1	35.	. 36.				_==-
\$1587 \$1587	-	DIODE:	1 2		1 2					1 4 5					lD .	14	20	1			
S2208	-	VOLTAGE VARIABL	1		1		1			1						3					
12-102-2		THERMISTER THERMISTER	2		2											1					
SA1048(Y)		TR	9	ĝ	9			100	lavery.		1							, 13	. 15	. 16,	17,
SA2458(Y)		TR	لصث	-	-	-		-		i	-	<u> </u>			Q ;	55.	56.	- 58	, 59	, 61,	62
SC3113(8)		TR	2	Ì	2	1		i		ļ			ł	ļ	Q,	54,	57				
SC2668(Y,O)	İ	TR	2	Ì	2	1		ł			ļ		1			1.					
SC2668(Y)			5		5		-		1100	100	111	1 1		7	Q,	. 4,	36.	38	. 40	. 48	
SC2240(GR)		TR TR	11	1	1				1050	129	19.7	14	115	14 - 1		. 29			3		
SC2458(Y)	1	TR	26					L	1				1								28.
					Í	1			1	İ	ł									, 52,	42,
	1				23	ļ			!				1								28,
SC2458(Y)	4	TR			- 2.3				-	· · · · ·		_		-							43,
				: .:		. 1											50.			, 53,	55
SC2458(Y)		TR FET	1		1	-										35		, ,,,			
SK125 SK30A(0)		FET	3		3	1		1					]				25.				
SK161(GR)		FET	2		2		-				1000	-	11.		α .	6.	7	<del></del>			
SK73(GR)		FET THE STATE OF STAT	6		6						2.01				Q ,		8	. 20	. 21	, 22,	32
SK73(Y)	+	FET						<u> </u>													
				1	1000	10000		100	200	N 615	_			-	<del> </del>	_				-	
												479,788 7		11/19		1415.	3 3	1	Jal.		
1								İ													
				1.086		3113		15.0	3 75		94				1	july .	3, 21		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
1. 7			17.4										0.04		1855	<u> </u>	e (14)	4 × 2	i nga	100	

# PARTS LIST TS-711A/E

AF UNIT	(X49-1180-	00)
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PART.NO	NOTE	NAME & DESCRIPT	ION	000												REFERENCE . NO
C45SL1H390J	MOTE		50V	1									- 1	1		C , 32
C455L1H101J	1		50V	3	1					!			1	ļ		C , 2, 3, 45
E04W1E4R7M			25V	2					L							C , 20, 21
			16V	7	1000			77	14.0				7.5	300	. 204	C , 6, 8, 9, 10, 17, 40, 5
E04W10100M	1		16V	1 1			M 1/201	l in a l	1922	36. A.			nior I			Care 75% 12 20 10 10 10 10 10 10 10 10 10 10 10 10 10
E04W10220M		CCCOTTO	10V	5		800			200	479.5	31.68	7.2			4 7 1	C , 5, 22, 25, 46, 56
E04W14470M		CLCC1110	10V	1												C , 47
CE04W1A101M		LCLC.NO	50V	ì										1	- 1	C , 27
CEO4BW1HR47M	i	CEECINO TT.	50V	18			1						- 1	!	- 1	C , 4, 11, 13, 14, 15, 16, 1
CEO4W1H010M		ELECTRO 1	3UV	1-10				-		27.0						, 19, 26, 28, 29, 35, 37, 3
						Cont.	(a 1,	1.073			Dwilling	90		: 20 30	y 140	, 41, 42, 48, 53
	-			2	13000	15 /	160%	Sec. 150	31.5	100		18.1	4.	- 1	0.4	C , 23, 24
CEG4BW1H010M	i	ELECTRO 1	50V					-	-	-		-			-	C , 43
CK45B1H471K		CERAMIC 470P	50V	1			1		l	1						C , 31
CK4581H561K		CERAMIC 560P	50V	1		}	ļ			ĺ				- 1		C , 36, 39, 44, 61, 63
CK45B1H102K	ĺ		50V	5		L		1	ļ	<u> </u>	ļ	ļ				C , 38, 39, 44, 81, 63
CK4581H152K		CERAMIC 1500P	50V	1			1	1 :	1		1	2.75				
CQ92M1H332K	1	MYLAR 3300P	50V :	. 1		1	10.5	1		13.4	V.	1.1	4			C 12
CQ92M1H103K		MYLAR 0.01	50V	1			1	<u></u>	11.5		:					C , 34
CQ92M1H103K			50V	4		i	1		i			}				C , 54, 55, 57, 58
	-	MYLAR 0.1	500	1	. [			1	1	į .		ì				c , 50
CQ92M1H104K	-	TANTALUM 0.1	35V	1		1	-	i		1	L	1				C , 59
CS15E1VOR1M		TANTALUM 3.3	16V	1		110	1	1		771.9				17.		C , 60
CS15E1C3R3M	1	TAR TAR STORE STOR	25V	1		1	3.1	1 15	Program		2012	15 15	98	No. 1	100	C , 51
C90-0882-05	1		16V	li		l '		1	166	10.0	100	1	1		ľ	C , 49
C90-0820-05		ELECTRO 470	100	-1	+	-	1	+	1	1-	-		i			
				1	1	1						i			!	
E40-0373-05		MINI CONNECTOR 3P		1 1				1			1	l	Ì		i	
E40-0473-05	*	MINI CONNECTOR 4P				<del> </del>	<del> </del>	-	1		<del> </del>				<del>                                     </del>	
E40-0573-05	*	MINI CONNECTOR SP		2		l set	1	[ ·		100	1.1					
E40-0673-05	×	MINI CONNECTOR 6P				1 %	100	1	130	1	11.00	100	[		1	
E40-0773-05	*	MINI CONNECTOR 7P		1_1		-	ļ	-	l	<del>                                     </del>	<u> </u>				-	
E40-0973-05		MINI CONNECTOR 9P		1	- 1	İ	1	1	1				İ			
•	i	i I		- 1	1	i	İ		i	1		ł	İ		i	0 11
MB3713		10		1		ļ	ļ	ļ	<b>└</b>	ļ						Q , 11
MC 911		3001		6			1	1 .		1	ļ		ł		i "	D , 2, 8
MC921	-	DIODE		1	.	1 .	į	1	1	1 :	1.	l .		1		D . 11
11472 L		1		1	1		1 .			L .	<u> </u>	<u> </u>	<b>!</b>			1
NJM4558S		i C		1 2	?	1		1		1		1	i		1	Q , 4, 9
		PAN HO SCREW		1 1			1		1	1		1	-	ì		
N30-3004-46	1	TAN HU SCHEW		1	1	!	1	1	İ	1		}			<u> </u>	
		TRIM.POT. 10K OH	M	+	2	1	1,775	1	1	1	177	T				VR , 1, 3
R12-3443-05	i	I I Wallet W	M .	1		Low		100	1.	10.0	100	1.1	1			VR , 4
R12-4413-05		110 2010 010				Par.	P 2	4 3	77	14,477	100	157		1000	100	VR , 2
R12-5420-05		TRIM.POT. 100KOH	M			+	+	-	╁	+	-	+	<del>                                     </del>		:	
	T	i.		1 1	, İ		1	1		i	1	1	1		i	Q , 5
UPC1158H2		IC		1 1	4	1	1	İ	1	1	1	1	1	1	Ì	1 -
	1				—ـــــــــــــــــــــــــــــــــــــ	ļ	+	<del> </del>	-	+		+	<del> </del>	100	-	D , 5
1N60		DIODE		1. 1	4	1	153.55	1	1.5	1.00	181	1		1.3	P .	0 2 10
188133		DIODE	or was the first	1 :	1 7		1.00	13	1000	1.8	Page 1	1.44	製料で	100	1000	
188133	1	DIODE					_		1	1 :		1	1		<u> </u>	D , 1, 3, 4, 6, 7, 9
		<del> </del>		1			1		-	1	1	1	1		i	1.
20140/0//	1	TR		1 2	2		į		i		1	i	1	1	1	Q , 2, 13
25A1048(Y)	1	TR			3	1	1		1	1	İ	L	1	L		Q , 3, 7, 8, 10, 12, 14,
25C2458(Y)		in.		1		1	+		1	1	1	17.	1.00	1 1	1	, 16
		1	2 - 2 m 24 T	1 0		<b> </b>	1 1		1.50	14.	1.	1 .	100	l	let y	Q 1
2\$C2459(GR)		TRACE SEEDING TO A SEED				100	1.5	100	1 8	1200	P.	1 4	ii.			Q , 6
25K3OA(GR)		FET		+	<del>`  </del>	100	+	+	+	+	+	<del> </del>	-	-	T	
		1			1		1		1	1	1		1		}	
					1	1	1	1	1	1	1		1	1	1	
	!	1		- 1	1	L	1	1	1	1						<u> </u>

# PLL UNIT (X50-1990-XX) (-00 : T,W -11 : K,M1,M2,X)

										NCTI	ON	8 QI	UANT,	ITY_				4
PART.NO	NOTE	NAME &	DESCRIP	TION		000	001	011	012									REFERENCE.NO
C45CH1H060D	NUIE	CERAMIC	6P	50V		1		1	T	1		Ī				1		C , 91
C45CH1H010C		CERAMIC	19	50V		1	i	1		1			1	ł	l	1	1	C /125
CC45CH1H070D	1	CERAMIC	7 P	50V		1 1		1	1	١.		ļ	l	١	İ.	<u> </u>		C ,110
CC45SL1H470J		CERAMIC	47P	50V	77 77	- 5	11	5 2			1.14	1		1.50	1500		12 m	C , 14, 32, 89,161,170
		CERAMIC	5P	50V		2		2	100	100				100		1 4 4 4	100	C , 66,152
CC45CH1H050C	ļ	CERAMIC	6P	50V		1	3.5	1			100	1 .	1	[	100			C .120
CC45CH1H060D	<del> </del>	CERAMIC	10P	50V		2		2		<b>—</b>	1						1	C ,137,158
CC45CH1H100D	1	CERAMIC	18P	50V		4		4	1		1	1		İ			l	C , 30, 81,119,164
CC45CH1H180J		CERAMIC	8P	50V		2		2	1	1	1	1	}	1		١.		C , 96,155
CC45CH1H080D	<del> </del>	CERAMIC	100P	50V		. 2		. 2	177	1	1							C ,146,160
CC45SL1H101J	1	CERAMIC	15P	50V		2	- · · · · ·	2	104	100	1.3.	10.00	1	1.50	1965		100	C, 95,165
CC45CH1H150J	1		220P	50V	100	1		1		1	.1 :	2.75	1		100	18 00	1 1	C -104
CC45SL1H221J	ļ	CERAMIC	10P	50V		1	i	1		-	1	-	<del> </del>				1	C /135
CC45CH1H100D	i	CERAMIC	27P	50V		1		1		1	1				1		i	C 118
CC45UJ1H270J	1	CERAMIC	330P	50V		l î	İ	ī		1	1	1	1		ì		1	C , 46
CC455L1H331J	<del> </del>	CERAMIC	150	50V		1		1		+	<del> </del>	<del> </del>			1			C , 65
CC45CH1H150J	į .	CERAMIC	182	50V		2	200	2	100	17	i	1	1	1.	İ	100	1	C , 52, 54
CC45CH1H180J	1	CERAMIC	0.5P	50V		3		3		1	1 : 1	1 .	1 8	1 -	1 :		1	C ,144,162,169
CC45CH1HOR5C	L	CERAMIC	22P	50V		2		2		<del> </del>	+	+			i	1	1	C ,136,148
CC45CH1H220J	i	CERAMIC				4	ļ	4			-	1	1			İ	1	C , 1, 9, 20, 22
CC45CH1H22OJ	1	CERAMIC	22P	50V 50V		4		4				İ				1		C , 21, 44,124,151
CC45CH1H030C		CERAMIC	3 P	50V		1		1		+	+ : -	+			<del> </del> -	-		C , 43
CC45CH1H270J	1	CERAMIC	27P			1		1		1	1	1	1.1				100	C , 64
CC45CH1H040C		CERAMIC	4 P	50V		3		3				1: 1	1.					C , 10, 50,121
CC45CH1H270J	İ	CERAMIC	27P	50V_		2		2		<del> </del>	+	+	<del> </del>			1	-	C ,128,129
CC45CH1H330J	1	CERAMIC	33P	50V		3	ļ	3	1		1	1	1	i	1	į .	İ	C , 3, 40, 85
CC45CH1H330J		CERAMIC	33P	50V			1			i			1		l			C ,147
CC45CH1H050C	ļ	CERAMIC	5 P	50V		1		1		<del></del>		+				<del> </del>		C , 45
CC45CH1H680J	1	CERAMIC	68P	50V		1		1	100		1		1	110	-21.	100		C , 82, 84, 86, 88
CC45SL1H390J	1	CERAMIC	39P	50V		4	ł	4				1	1		1	1	1.0	C ,147
CC45CH1H050C	1	CERAMIC	5P	50V		1	<u> </u>	<u> </u>		Ĺ	1	1		-	ļi			
CC45SL1H470J	1	CERAMIC	47P	50V		4	l	4		1	i			į.	i	1		
CC73ECH1H010C	İ	CHIP CAP.	1P	50V			l	1	i		1		1		1	1	ì	C , 61
CC73ECH1H080D		CHIP CAP.	8 P	50V		1	L	1		<u> </u>		1		ļ	1		ļ	C , 63
CC73ECH1H070D	+	CHIP CAP.	7.9	50V		. 1		1		1	1.	1	1			i i	1.	C , 62
CC73ECH1H100D	1	CHIP CAP.	10P	50V		1	!	1				100	1 .	1.5	1 1			C , 62
CC73ECH1H160J	i	CHIP CAP.	16P	50V		1		1	1	ŀ		1	1 .					C , 60
CEO4W1E4R7M	+	ELECTRO	4.7	25V		5	1	1			1			I	Ì		1	C , 58
CE04W1E4R7M	1	ELECTRO	47	10V		5	1	5	1	i		İ	1		1			C , 77,107,113,116,150
	į	ELECTRO	100	107		3	1	3	1	1					ĺ.			C , 69, 99,122
CEO4W1A101M		CERAMIC	10002	50V		10		10	_			7			1			C , 8, 11, 13, 57, 94, 97, 10
CK4581H102K	i	CERAMIC	10001			-			1		1		1 .			1.		/117/145/166
			0.01	50V		4	1 .	1 4					.1	1	1		1	C , 47,138,143,156
CK45F1H103Z	<del> </del>	CERAMIC	680P	50V		2		2	-	-	+	+		_	1			C /101/103
CK45B1H681K	İ	CERAMIC		50V		12		12			1		1			1		C , 2, 6, 7, 12, 59, 68, 7
CK45B1H102K	İ	CERAMIC	1000P	3 U V		12	1	1		1	1	-	1			1		, 71, 92,131,167,177
	<del> </del>	ļ	22002	50V		1		1	<del> </del>	1-	+	+	+		+	<del>                                     </del>		C . 74
CQ92M1H222K	1	MYLAR				1		1		100	1 1	100	100	137	17. 14	1	100	C 114
CQ92M1H822K	1	MYLAR	8200P	.50V		1	- "	1	1.1	1	10	1 55	1000	1	1			C , 75
CQ92M1H223K	1	MYLAR .	0.022			1 1	-	1		+	+	+	<del> </del>	-	+		<del> </del>	C , 56
CQ92M1H473K		MYLAR	0.047	50V				1		1	1	1	1	1	ļ		1	C ,111
CQ92M1H683K	1	MYLAR	0.068	50V		1				ł	1	1	1	i	1	1		C , 49
CS15E1VR22M	1	TANTALUM	0.22	35V		1		1		ļ		+	ļ,			<del> </del>		C , 49
CS15E1VR47M		TANTALUM	0.47	35V		1		1 2	1445	300	1:00	1864	10.00	1.2.3		DV.		C , 72, 73
C\$15E1F010M	1	TANTALUM	1	25V		2	130	2	L	0	100	13.	1	la la		1	1000	
CO5-0062-05	1	TRIMMER	6P			1	111	_ 1			1	ــــــــــــــــــــــــــــــــــــــ	1	-	-		ļ—	TC , 2
005-0030-15	<del>                                     </del>	TRIMMER	20P			1	1	1		1		i	ĺ	l	1		i	TC , 1
CO5-0067-05	1	TRIMMER	25P			2	1.	2	1	1		i	ì		İ		l	TC , 3, 4 C , 5, 19, 23, 24, 29, 33, 3
				50V		15		15										IC , 5, 19, 23, 24, 29, 33, 3

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						1311	M C I I	UN	& Q	UANI.	7 1 1							
PART.NO	NOTE	NAME & DESCRIPTION	000	001	011	012									1			CE.NO
	1					ĺ		i	i	i	1				-			51, 76, 79, 90, 96,12
	1	•	İ	ĺ	1				!		1	1			1		54	
091-0117-05		CERAMIC 0.01 50V	7		7		1	i	1		i				C			48, 53,108,115,126,14
C91-1008-05	1	CERAMIC 0.022 50V	21	1000	21		1 18		1	100	P	1	1.5	100	C			17, 25, 26, 27, 28, 3
	1 3		1.7		100	100	100	1. ^		1300	1.1	[137]	100		1			37, 38, 55, 80,105,10
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	<u> </u>		ļ	!	1				<u> </u>	1					<u> </u>			139,141,142,157,159,16
			1 4	100		100	1111	15.00	100	146	P. 18.				1	1	68	
	100		1	1.50		512			1880.	1.11	1766		100		1.			
504-0154-05		RF CDAX. CONNECTOR RAZHETZDO		<u> </u>	1		1	1							-			
E23-0512-05	İ	TERMINAL 1P	9		9			i	1	1		i			1			
E40-0473-05	*	MINI CONNECTOR 4P	1		1				1	1	1	i		1				
E40-0673-05	*	MINI CONNECTOR 6P	1 1		1	!				1	1		<u> </u>		<u> </u>			
E40-0873-05	*	MINI CONNECTOR 8P	1		1	1	1.	1	100	1	100	100	1 :	1.5	1 :			
		g* .	1 . 1	-	i					1		1:	-					
F11-0818-14		SHIELD CASE(VCO TOP CASE)	_1		1			l	<u> </u>			1		!	1			
				1		1				i -					1			
L30-0289-05	- 1	1 FT	1		1	1			)	į	1			1	L		44	
L30-0281-15	ļ ļ	IFT	2		2	Ц.									L			13
L32-0624-05		OSCILLATING COI	. 1		. 1	10.0	1.								L		21	
L32-0639-05	i	OSCILLATING COIL SOMHZ	1	i .	1	1.00		1 1	1000	1.			100		۱.	10	33	
L33-0647-05	ļ	CHOKE COIL 18 UH	1		1	1		1 : 1	Part .	ï	1	1	1	100	L	,	14	
L33-0668-05		INDUCTOR 3.3 UH	1		1		$\overline{}$		-	:		-		ļ	iL	-,	20	
L34-0894-05		COIL 3 5T	2	ł	2	i .	1		ļ	1		1			14	,	25,	26
L34-0908-05		COIL 3 9.5T	3	1	3	1	1	ļ.	1	į.	i	i		1	l L	,	24,	27, 35
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L34-0683-05		TUNING COIL	. 1		1			100		100	1.		F		ļĹ,			
L34-0749-05	- 1	TUING COIL	l ē		2			1			for for				١٠			46
134-2041-05	<del></del>	TUNING COIL	2		2		·		-		:	_		<del> </del>	L			48
L34-2232-05	N.	TUNING COIL 51.2MHZ	ž	į.	2				1	ł			1	[	Ī			40
L34-2064-05	"	TUNING COIL	2		2		i		1	!			İ	-	Ī		Š,	
L34-3066-05		TUING COIL	1			<del></del>	<del></del>			<del> </del>		<del></del>	<del> </del>		1		6	
L40-6891-03		INDUCTOR 68 UH	3		1 3		İ	i	ŀ	i		-	ŀ	l .	l L			38, 43
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L40-1511-03		INDUCTOR 150 UH	2	<del> </del>	2		<del></del>	<del> </del>			-	<del></del>		<del></del>	1		12,	
L40-1311-03		INDUCTOR 330 UH	2		2		1	1	1	į	ļ	1	!	i	li.			31
L40-1021-03		INDUCTOR 1 MH	3	1	3		ĺ		1		į	!	1	i	li.			16, 18
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L40-1011-14		INDUCTOR 100 UH INDUCTOR 470 UH	1		1	1 4	100	100	100	2014	^ -	1	1.0	1	1			30
L40-4711-13				-		├		├	<del></del>		<del> </del>		ļ	<u> </u>			42	10
L72-0346-05		CERAMIC FILTER SFE11.025MJ-A	2	}	2		1						-	i	15			10
L77-0950-05		XTAL 10.6965MHZ	1	ļ į	1	1	I	1	i		!	i	1		L		17	
L77-0951-05		XTAL 10.6935MHZ	1	<u> </u>	1			ļ		-					L		19	
L77-1255-05		TCXO 10.240MHZ	1	60	1		Fa. 3	1.00	12,500			2.3		l.	L		41	
L79-0644-05	N '	BPF BPJ83	2	100	2	3 - 1	100		1400	33/4	100	1 1.00	17 18	i e i	L.		28,	29
				ļ		<u> </u>			<u> </u>	1.0	<u> </u>		ļ		<u> </u>			
MA856		DIODE	2		2	}		:	i	i			į	i	0		4,	5
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MC145156P		I C	1		1	!	<u> </u>		<u> </u>						Q		19	
MC921		DOUBLE DIODE	2		S	1.35		1	F	4.3			1. 1	l:	Q		6,	8
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M54459L		IC	1		1				1 1 1 1		<u> </u>			-	Q		23	
								-						_	; -	-		
NJM78L05A		IC	1	1 1	1	I			[					l	Q	,	37	

	Ţ							ON	8 G	UANT	ITY				
PART.NO	NOTE	NAME & DESCRIPTION TRIM.POT. 1K OHM	000		011		-	<del> </del>	+	+	<del></del>	-	<del>;                                     </del>	-	VR , 1, 2, 3
R12-1405-05	1	TRIM.POT. IN UNIN	٦	Ì	3			-	1				į		AK > 1> 5> 2
SN16913P	l	IC	4	<u> </u>	4			<u>.</u>	1	⊥		<u> </u>		<u> </u>	Q , 3, 4, 6, 31
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				250					. 1920				9.1		
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# PARTS LIST TS-711A/E

TONE	HIMIT	/X52-	1290-	60)	(T.W)

	<del></del>	-1290-60							01	STIN	CTIO	N 8	QL	ANTI	TY				DECEDENCE NO
PART.NO	NOTE	NAM	E & DESC	RIPTI	O N		060												REFERENCE.NO
K4581H102K	10.12	CERAMIC	100	0P 5	ΟV		1				- 1	- 1	- 1	,	- 1	İ			Č
Q92M1H472K	1 1	MYLAR		OP 5			1	i		i	1		1	i		!	1	i	č
Q92M1H103K	1	MYLAR	0.0		ov		1					-					-		Constitution and the second second second
Q92M1H333K		MYLAR	0.0	33 5	OV.	A 1	1	365.4		4.5		,ja:4			3.24	.00	38w	100	C C
90-0847-05		ELECTRO		1	0 V		1			oğu x								1	<b>.</b>
91-0433-05	<u></u>	CAPACITOR	0.0				1										-		Č
91-0117-05	ì	CERAMIC	0.0	11 5	OV													ļ	
40-0417-05	-	1					1			2.		3.5.1	i de co	· •					ic , 1
E555P		IC			-		_ 1	A .		173									R
D14882C472J		RES. CARBO RES. CARBO RES. CARBO	N 128	KOHM OHM	1/6W		1 1 1												R R
D14882C333J D14882C473J	+	RES. CARBO	N 47	CHM	1/6W		1									11.5-			R R VR / 1
N148K2B9102F	Ì	METAL FILM	911		1/8W	:	1	ļ				2.4		100					VR , 1
12-3521-05	-	IKIM.FUT.		`															
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	_						1	1					1	1		1	-	1	

CONTROL HAUT	(VE2 1/10, YY)	1-11 · K M1	-21 : M2 X -	·51 : T -61 : W)

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C45CH1H330J		CERAMIC 33	P 50V		1	5 S	1	Bridge	1		[] 1			K. W.	144.0	100	C 54
C45SL1H121J		CERAMIC 12	OP 50V		1		1	3346	1	18.000	1				(A. 50 PA	100	C , 44 C , 65, 69
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TC143TS		DIGITAL TR		-	2		2		2	4.0	2		114	1	14.75		
02-0122-05	N	IC SOCKET 2	4PIN		1		1		1		1				}		
23-0512-05		TERMINAL 1	P	- 1	2		. 5	l	2	1	2	1			L	i	
23-0312 03									<u> </u>	<del> </del>	<del></del>	<u> </u>			<del></del>	<del> </del>	<u> </u>
32-0761-04		STUD & BOSS (STI	CK TYPE)		1		1		1	1	1	h.80	1600	1. 2	K.W.	10, 3	
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77-1206-05	N	XTAL 3	.6864MHZ		1		1		1	-	1		4	1	1	نخنه	A 7 2
78-0009-05	N		MHZ		1	Ī	1		1		1			1			X , 1
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188418-20LP-GRA	N	IC 8	BIT X2(RAM)		1		1	ļ.,	1	<del> </del>	1	ļ.,	-	ļ	+	100,00	IC . 14
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130-3006-46		PAN HO SCREW		1316	2		2		2	1	2	Fig.5	1000	4.5	1		길이 들어 없었다. 그리고 하는데 되었다.
N30-3006-46	1	PAN HO SCREW			1	ria k	ୀ.		<u> E</u>		1	1	Pinet:	18.14	10000	18, 3	
130-3010-40		TAPPING SCREW			2		2		2		2	1		i	1		
187-2606-46	1	ALLING SCHE			- 1						1		1	1			l
2071101	N	10		i_	1	•	1		1	1	1	L	Щ.		1		IC , 10
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		1	1		DI	STIN	CTION	1 & QL	ANTLIY			
PART.NO	NOTE	NAME & DESCRIPTION	011	012	021	022	051	52 061	062		REFERENCE.NO	
R12-4416-05	N	TRIM.POT SOK	1		1		1	1			VR , 1	i
R90-0515-05	"	RESISTOR BLOCK 10K	2	1	2		2	2		l i	R , 3, 15	i
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SN74LS138N		IC	1		1	i	1	3	.	1 1	IC , 12, 17, 22	į
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UPD7507G-575-00	)	MICRO-PROCESSOR FOR DCS			1					ļ <del></del>	1	
	ļ.					.		1.0	l i	1 :	10 , 2, 8, 9, 10, 13,	14. 15
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	1	1	1 1					!		i 1		1
188133	ł	30016	4			. (		i		1	D , 30, 31, 33, 35	
155133	i	DIODE		Į.	3	: :					D , 30, 33, 35	
	+	DIODE	_				5			1	0 , 16, 30, 33, 34, 35	
188133	1		İ	1			- 1	6		1	0 , 16, 30, 31, 33, 34,	35
155133	1	DIODE	1			1	. 1	-		1 :	I i	ŀ
	<u>:</u>	1	1	_	1		1	1 1		<del> </del>	Q , 14	
	. N	TR	2	ĺ	2		2	1 2			9 , 18, 20	ţ
2SA1015(Y)	;	TR	1		1		1	1		1 !		
2SA1048(Y)	<u> </u>	TR		!			1			<del></del>	Q , 21	
2SA1115(E)		TR		i	-		-	3			Q , 16, 17, 19	
28A1015(Y)	!	TR	3		3	1 1	3			1 1	0 , 13	
2SC1959(Y)	1	TR	- 1		1	LI	11	1		<del> </del>	7, 8, 9, 10	
2SC2458(Y)	1	TR	4		. 4		4	4		1 !		1
25C27O3(Q,Y)	!	TR	1	i	1		1	1	1 1	1 1	Q , 15	1
	į.										<u> </u>	
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į.	!				1					1 1	1	
	<u> </u>			<del></del>			-	<del>i</del> -	<del></del>	+		
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		X54-1820-11)			Ď	ISTIN	CTION	8 Q	UANTITY			
DADT NO	NOTE	NAME & DESCRIPTION	01	11		1		<del></del>		1		REFERENCE.NO
PART.NO	NUTE	CERAMIC 100P 50V		1		-			1 1	-		C , 20
CC45SL1H101J	1	ELECTRO 10 35V		2	1	1 1		i		1 !		C , 12, 13
CE04W1V100M	i			2	-	1 1	!	İ	1 1	1 '		C , 10, 14
CE04W1C100M		LL LO : NO		1		+			1	<del>-i</del>		C , 8
CE04W1C330M		Leconing		1		1 1	- 1	1	1 1	1 . 1		c , s
CE04W1A470M	1	ELECTRO 47 10V				1 1	i	1			i	C , 1, 2, 3, 15, 16, 17, 1
CK45B1H102K	1	CERAMIC 1000P 50V		8				_			+	, 19
			- 1	- 1		1 1			! !			
CQ92M1H103K	İ	MYLAR 0.01 50V		1	1	1 1				1 1		
CQ92M1H223K	1	MYLAR 0.022 50V		1		أسلما						
(91-0769-05		CERAMIC 0.01 50V		1			.	- 1		1 1		C , 6
(91-1008-05	-	CERAMIC 0.022 50V		2 !	1.1.	1		į	1 1	1 1	1	C , 7, 9
U71-1000 UJ	1			1	11.				L			
DTA124EF	N	DIGITAL TR		2		1					-	0 , 11, 12
DIATZ4EF	i N	DIGITAL IN	ı	-	-	1 1	1	-	1 1		1	1
		SP METAL SOCKET	ı	1		1 1	-				i	
E06-0858-05		EARPHONE JACK EXT.SP		1	+	1						
E11-0401-05				î	1	1 1				1		1
E11-0407-05		PHONE JACK PHONES		1	1	1 !				1 !	1	
E11-0413-05				11-			-+		<del> </del>	+		
E11-0422-05.	N	KEY JACK KEY				1	ì	- 1	1 1		1	
E31-3052-15	N	TAPE CABLE 10X25MM		1	i		-		1 1	1 1	1	1
E31-3053-15	N	TAPE CABLE 12X25MM		1					-	<del></del>	-i	
E31-3054-05	N	TAPE CABLE 4X50MM		1	1	1 1	i	1	1 1		i	İ
E31-3055-05	i N	TAPE CABLE 11X50MM		1	!	1 1		1		1 !	İ	i
E31-3056-05	N	TAPE CABLE 12X50MM		1								
					-	1			1 1	1 1		
FIP11FM7		DISPLY TUBE		1					! ]			V , 1
19-0323-05		TRANSFORMER		1		1					i	T , 1
		IFT		1	i	1		i			İ	L , 2
L30-0504-05	1.			1			-	ì	1 1	1 1	1	L , 3
40-1511-14		111000101		11		-				1		L , 1
L40-1011-04	į.	INDUCTOR 100 UH		<b>^</b> i		i 1		1	1 1		!	
		i		2 1	1				1	1 1		0 , 3, 4
MC931		DIODE		1	<del></del>	<del>-i</del> -l					<del></del>	0 , 2
MTZ6.2JA		DIODE			-	1			!	1 i	i	D , 5
MTZ7 SJA .		DIODE		1	-	1 1		1		1		, ,
	<u> </u>		<del></del>	1		<del></del>		<del></del>	<del></del>		<del></del>	VR , 6
R12-2413-05	i	TRIM.POT.(5K)		1	İ	1 1	- 1		i	1 1		VR . 3
R12-3446-05	ļ	TRIM.POT. (30K)		1	- 1			-			i i	VR , 7
212-5420-05	1 .	TRIM.POT. 100KOHM		1							<del></del>	VR , 8
R12-7403-05		TRIM.POT. 500KOHM		1	į	i i	ĺ	İ	l i	1 1		1
819-3420-05	1	POTENTIOMETER		1	1				1 1	1 1		A .
R19-9409-05	N	POTENTIOMETER		1		1 1					<del></del>	<u> </u>
R24-9404-05	N	POTENTIOMETER		1	T							VR , 5
R90-0520-05		RESISTOR BLOCK 47K OHM X5		1		1 1	1					R , 25
890-0522-05		RESISTOR BLOCK 47K OHM X6		1	1	1 1			L	1		R , 24
	l N	RESISTOR BLOCK 47K OHM X11		1								R , 23
890-0579-05	1 14			ĺ	i		!	1	1		ŀ	
*****		IC	1	2	ı	1 1			j i	!	ļ.	Q , 7, 8
TC5066BP		1.0				7-1		-	!		1	
	İ	ic		1			i			i	i	Q , 6
UPA80C		ic		1	1					1 1		Q , 5
UPD763C	N	16		-	+-	+			-			
		1		1		1 1	1		1 1			10 . 1
1060		DIODE		1	- 1	!		1	i			TH . 1
112-351-2		THERMISTOR		1		+			<del></del>	+	<del></del>	+
	1				!			1		1 1		Q , 9, 10
2SC1959(Y)		TR		2	1	1 1		1			-	I I I I I I I I I I I I I I I I I I I
25C245R(Y)	1	TR		1		1 1	4	1	· 1	1 4		Q , 4

# PARTS LIST TS-811A/B/E

# SEMICONDUCTOR (TS-811A/B/E)

- N : New parts
- \* : Please note that parts are sometimes not in stock and it takes much time to deliver.

Re-	(TS-811A/B/E)	Item	Re- marks	Part No.	Ite	m ———	Re- marks	Part No.
marks				S10VB20	Power m	odule		M57745
Re-	Part No.  1N60 1S1587 1S597 1SS101 1SS133 1SV50 DAP401 MA856 MC911 MC921 MC921 MC931 M1308 M1407 ND487C1-3R U05B V06B 1S2208 MV13 VD1223 MTZ6.2JA MTZ6.2JA MTZ6.2JA MTZ7.5JA MTZ7.5JA MTZ8.2J(B,C) MTZ9.1JB MTZ12JB FIP11FM7 LN66(R)	Resistor block Photo TR Digital TR  TR	N	\$10VB20  PN126S(R)  DTA114Y(S) DTA124EF DTC114E(S) DTC143T(S)  2SA933S(Q) 2SA1012(Y) 2SA1015(Y) 2SA1048(Y) 2SA1115(E) 2SA1307(Y) 2SC1740S(Q) 2SC1740S(Q) 2SC1815(Y) 2SC2026 2SC2240(GR) 2SC2458(Y) 2SC2459(BL) 2SC2459(BL) 2SC2459(GR)				M57745  BU4011B LM358P M54459L M5L8255AP-5 M83713 MB8418-20LP-GRA MC14069UBCP MC14584BCP MC145156P MN6127A NE555P NJM78L05A NJM4558S PST518A SN74LS05N SN74LS32N SN74LS32N SN74LS32N SN74LS174N SN16913P TA7302P TC4011BP TC4069UBP TC5066BP TMP8255AP-5  µPA80C µPB555C µPC78M08H µPC577H(E,F) µPC1158H2
	LN66(R) LN01201C LN01301C LN01401C 112-102-2 112-103-2	FET	N				2 2 2	µРС577H(E,F) µРС1158H2 µРС4558С µРС7805H µРD763С µРD7507G-575-00 µРD7802G-088-36
	marks	1N60 1S1587 1SS97 1SS101 1SS133 1SV50 N DAP401 MA856 MC911 MC921 MC931 MI308 MI407 ND487C1-3R U05B V06B  1S2208  MV13 VD1223  MTZ6.2JA MTZ6.2JA MTZ6.2JA MTZ7.5JA MTZ8.2J(B,C) MTZ9.1JB MTZ12JB  FIP11FM7  LN66(R) LN01201C LN01301C LN01401C  112-102-2 112-103-2 112-351-2	1N60	Pert No.   Item   marks   No.   Item   marks   No.   Item   marks   No.   Item   marks   No.	The marks	The marks	Tem	Part No.   Item   marks   Part No.     Power module

NCODER ASS'Y (V	Re- marks	NAME & DESCRIPTION	Q'TY	REFERENCE. NO
CE04CW0J330M		ELECTRO 33 6.3V	1	C1
LM358P LN66(R)		IC LED	3	IC1 D1,2,3
RD14BB2C102J RD14BB2C105J RD14BB2C181J RD14BB2C182J RD14BB2C222J RD14BB2C472J		$\begin{array}{lll} \text{RES. CARBON} & 1 \text{k}\Omega \\ \text{RES. CARBON} & 1 \text{M}\Omega \\ \text{RES. CARBON} & 180\Omega \\ \text{RES. CARBON} & 1.8 \text{k}\Omega \\ \text{RES. CARBON} & 2.2 \text{k}\Omega \\ \text{RES. CARBON} & 4.7 \text{k}\Omega \\ \end{array}$	2 2 3 4 1 4	R5,10 R8,13 R1,2,3 R6,7,11,12 R15 R4,9,14,16
R 12-2413-05 R92-0150-05		TRIM. POT. 5kΩ SHORT JUMPER	2 2	VR1,2
PN126S		PHOTO TR	3	01, 2, 3
VO6B		DIODE	1	D1
2SC2458(Y)	!	TR	1	Q4

# TS-811A/B/E PARTS LIST

TC.	011	A /D	/=	CEN		ΔΙ
	× 1 1	4 / M	<i>,</i> –	14 - 1	v c n	

PART.NO	. :
## A01-0979-02 N CASE(A) UPPER 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
## ## ## ## ## ## ## ## ## ## ## ## ##	
## ACO-22529-03 N PANEL	
805-0708-04	
## STO-068-04   FRONT GLASS   1 1 1 1 1   1   1   1   1   1   1	
## SPONT GLASS   1	
\$10-088-04	
B30-0617-15	
B31-0455-05	
SAG-9-0407-06   SPACER   SPA	
340-3565-04	
S40-354-9-14	
B40-3550-14	
340-3549-14	
SALTION LABEL FUSE 3A   1	
S42-1739-04	
Section	
842-1740-04 VOLTAGE INDICATING PLATE 240V 842-1740-04 VOLTAGE INDICATING PLATE 220V 1 1 842-1740-04 VOLTAGE INDICATING PLATE 220V 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
## ## ## ## ## ## ## ## ## ## ## ## ##	
842-174-0-04   VOLTAGE INDICATING PLATE 240V   1   842-174-0-04   N   CURRENT INDICATING PLATE 8.5A   1   1   1   1   1   1   1   1   1	
842-2400-04 N CURRENT INDICATING PLATE 8.5A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
SA2-2400-02	
842-2375-14 N CURRENT INJUNITY	_
842-2536-04 N BADGE TS-811A 1 1 843-1039-04 N BADGE TS-811B 1 1 1 843-1041-04 N BADGE TS-811E TRIO 1 1 843-1041-04 N BADGE TS-811E TRIO 1 1 843-1040-04 N BADGE TS-811E 1 1 1 843-1039-04 N BADGE TS-811E 1 1 1 843-1039-04 N BADGE TS-811B 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
843-1039-04 N BADGE TS-811B 1 B43-1041-04 N BADGE TS-811E TRIO 1 B43-1041-04 N BADGE TS-811E TRIO 1 B43-1040-04 N BADGE TS-811E 1 1 B43-1040-04 N BADGE TS-811E 1 1 B43-1039-04 N BADGE TS-811B 1 1 B50-4105-00 N INSTRUCTION MANUAL (K) 1 S50-4105-00 N INSTRUCTION MANUAL (K) 1 B50-4106-00 N INSTRUCTION MANUAL (T) TS-811E N INSTRUCTI	
B43-1041-04	
843-1040-04 N BADGE TS-811E 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
B43-1039-04   N   BADGE   TS-8118   1	
B43-1039-04	
846-0410-00	
B50-4195-00	
B50-4162-00	
850-4161-00 N INSTRUCTION MANUAL (M.W.X) 1 1 1 (G91-0496-05 CERAMIC FOR AC 470P 2 2 2 2 2 2 2	
C91-0496-05 CERAMIC FOR AC 470P 2 2 2 2 2	
1041-0448-03	
1091-0496-03	
[041-0647-03] [05//unit   0// un   0//	
DOS-0306-04 ENCODER DISC ROTOR 1 1 1 1 1	
D04-0308-04	
007-0307-04   1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
DAO-0627-05 DETECTOR MECHANISM UNIT	
107 4751 05 N 137 P. 110 (ACC) 1 1 1 1 1	
E07-1331-03 A 133 143 143 1 1 1 1 1	
E07-0852-03 VOC AGC GEEGATION	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
1609-04/2-05	
1E12-0001-15 PHONE PEDG (2007)	
E12-0401-15 PHONE PLUG (ACS) 1 1 1 1 1 1	
F18-0351-05	
129-0463-05 1P JUNCTION CONNECTOR 1 1 1 1 1	
F30-1643-15 AC CABLE (ACS)	
F30-1644-15 AC CABLE (ACS)	
E30-1665-05   AC CABLE (ACS)	
E30-1647-05 AC CABLE (ACS)	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
E31-3049-03	
E31-3092-05 N= CABLE #111 1 CAME	
[531-3031-05]	
[531-3064-00] * [#162 3 [4] 1 1 1 1 1	
E40-0774-05 • PIN ASS'Y	

			7			ISTI	NCTI	0 N	&ି ପ	JANT.	I T Y						
DADT NO	NOTE	NAME & DESCRIPTION	011	021		061			T	i -					REFERENCE.	10	
PART.NO	NUIE	FUSE 3A	1	1	1	1	1	1									
F05-3022-05	İ	FUSE 2A	-	1	1 1	. 1	1 1		1	!		-	1				
F05-2023-05		FUSE 3A		1 1				ļ	į	1	ļ	ļ	1				
F05-3022-05			1 1		1	1	1	1.	i –	1							
F07-0858-03		HEAT SINK COVER	5			1	1 -		1								
F10-1206-04	*	SHIELDING PLATE	1	6	1	6	6	ł	1	1							
F10-1206-04		SHIELDING PLATE	-						<del>  -</del>								
F11-0870-12	*	CONTROL CASE	1						1	i	1	1					
15-0655-04	*	BLINDING PLATE	1						1	1		(					
F20-0521-04	1	INSULATING PLATE	1					-	<u> </u>			<del> </del>					
F29-0041-05	*	CAPACITOR COVER	1	1	1 1	1	1	1	1				1				
27 0041 03			1	j	1	that is	1	1	1	100	10	100	100	i .	May 1		
301-0818-04	+	COILED SPRING	5	5	į i		5	1 _	1 1 1		1		Ĺ				
301-0818-04		COILED SPRING			- 4	. 4			-	i		1	i				
		KNOB FITTING SPRING	3	. 3	1 3	3 3	. 3	1	1			1	i				
602-0505-05	1	GND SPRING	1		1			ļ	!	į .	ļ		1				
G02-0550-04			2		1	2 2	2	ş	1	1	7. 1	1					
G13-0649-04	- 1	CUSHION FOR METER	1	1					10.1	100	100		1				
G13-0642-04	: *	CUSHION FOR PLL	1						F	1	1.	1	į.	1			
G53-0510-04	2	PACKING FOR PANEL	1 1	<u> </u>	+-	+ +	+			<del></del>		-			<del></del>		
			1 .		1			1	1	Ì	ŀ	]	1			,	
H01-4636-04	N	CARTON (INSIDE) TS-811A	1			1	1	1	1	i .	1	1	1				
401-4594-04	N	CARTON (INSIDE) TS-8118	ļ	1		-		<u> </u>	<b></b>			Ĺ			<del></del>	<del> </del>	
H01-4595-04	N	CARTON(INSIDE) TS-811E TRIO	1		1		ł		1 '	1	1	ļ	1	1			
101-4624-04	N	CARTON(INSIDE) TS-811E	1		1	1		1		1	İ	l	1				
101-4594-04	N N	CARTON (INSIDE) TS-8118				1	1	l						L			
H03-2241-04	N	CARTON(OUTSIDE) TS-811A	1			1		1	1				İ	İ			
		CARTON (OUTSIDE) TS-8118	-	1	Į	ĺ		1	i		i		1				
H03-2217-04	N	CARTON (OUTSIDE) TS-811E		-	1	1 1	1	1		1	Į.		1	i			
H03-2234-04	N	CARTON(OUTSIDE) TS-811B	+		+	+	1	1		1		1					
H03-2217-04	N		1	1	1 1	. 1					1.75		i				
H10-2596-02	*	PACKING FIXTURE	1	1			1		1 1	12. 4			ľ	i			
H10-2597-02	*	PACKING FIXTURE							+	<del></del>	-		<del> </del>	-			
H12-1315-04		BUFFER	1							1	i						
H20-1425-03	1	PROTECTION COVER	1							1	ļ	ŀ	ł				
H25-0029-04		BAG (ACS) 60X110	1	1					-		ļ	ļ		-			
HZ5-0105-04		BAG 150X350	1						1	1.0	1	1					
H25-0103-04		BAG 125X250	1	1	1 1	1 1	. : 1				1 1	100	1	-			
M23-0103 04 .		55	1	1		1	1	L					<u> </u>				
102-0323-05		FOOT CASE(8)	4	4	1 4	. 4	. 4	i	1	T	Γ_		1	l .			
	1	FOOT CASE(B)	1			1 1	. 1	1	1	!	ł		1	!			
102-0407-04	1	FOOT CASE(SIDE)	4							į	į			į			
J02-0403-04			2					1	1.		1	1	T				
J21-2573-04	*	FOOT HARDWARE	5			۱ ،	5		1	ĺ			1	1			
129-0407-04	1	SW GUIDE A (TACT KNOB)	1 ,	,		م ا	,	1	1	1	!	į	į.	l	i		
J29-0407-04		SW GUIDE A (TACT KNOB)	+				+	+	<del>-</del>	├	$\vdash$	+					
J31-0141-04		COLLAR MIC	1							i	1		İ	1			
J42-0442-05	1	HOLE BUSH ACC1	1					i	1	1	1	1	1	1			
J61-0404-05		FASTNER FOR DC PLUG	1					<u> </u>	<del> </del>	-	<u> </u>		<del>;</del>	<del></del>			
J61-0408-05		VINYL TIE	1			1 1			ł	1.3	1 .	1	1	ľ .	)		
J61-0408-05	1	VINYL TIE	6	6	1 6	5 6	6	186	10.	1.	11	1 .	1		ì		
301-0400-03	1	1.5	1		12.		1	1	<u> </u>		L	L		-			
K01-0410-05	<del></del>	HANDLE CASE(B)	1	1		1 1	. 1	1	1	1	1	1	1				
		MAIN KNOB	1								1		1	1			
K21-0768-04	l l	ROUND KNOB RIT	1 î					1	1	1	1	1	1		l		
X23-0776-04			1 3			3		1	1	1		1	1				
K23-0710-04		KNOB	2	2	1	2 2			land.	Dist.	100	11	List	144			
K27-0467-04		The state of the s	1					Take.	100	1200	10,500	1	100	t i i	I 197		A.
K29-0758-04		KIOO	5			5		+	+	+	1	+	†	<del></del>			
K29-3001-04		KNOB N8	3			'  '	5			1	1	1					
		TACT KNOB RIT.TONE															

# PARTS LIST TS-811A/B/E

					- D	TSTTE	NCTIO	3 N	8 01	UANT	ITY				
	Ī	NAME & DESCRIPTION	011	021					<u> </u>						REFERENCE.NO
	NOTE	TACT KNOB RIT. TONE			4	4									
K29-3032-04	į.	MAIN TUING KNOB	1	1	1	1	1		ì	1	i	ł			
K29-0771-04	i	KNOB	3	3	3	3	3		<u> </u>		<u> </u>	<u> </u>	ļ		
K29-0741-04	<del> </del>									ļ	1.	1	1::		
L01-8266-05	N.S.	POWER TRANSFORMER	1	1	1		1	. 12					<u> </u>		
N09-0646-04		SCREW M4X4	2	2	2	2	2		1	1		1	İ	1	
N16-0040-46	ļ	SPRING WASHER	1	1 2	2	2			1	1	1	1	1	1	
N30-2604-46		PAN HD SCREW	2	- 2	- 2				<del> </del>	<del>i</del>	+	+	1	1	
N30-3004-46	1	PAN HD SCREW	5		1		ء د				11:11	1.	11	1 1	
N30+3010-46	100	PAN HD SCREW		2	2	2	2	17.		1	1	1.		1 1	
N30-3006-46	1.	PAN HD SCREW	2						+	+	+	-	+-	-	
N32-2604-46	1	FLAT HD SCREW	6	6 6	6				1		1	1	1		
N32-2606-46	1	FLAT HD SCREW	2	2	2				1		ļ		1	1	
N32-3004-46		FLAT HD SCREW	2	2	2				<del></del>	+	+	1	1	1	
N32-3006-46		FLAT HD SCREW	4	4	4				1				1		
N33-3006-41	1	ROUND FLAT SCREW	4	4	4			1	1			1	1		
N33-3006-45		ROUND FLAT SCREW	11	11				+	+	+			1 -	1	
N35-2604-46		BIND SCREW	18	18								1	-		
N35-3004-41		BIND SCREW	1 2	2								1	1		
N35-3008-46		BIND SCREW	47			1	1	+	-				Τ''	1	
N87-2605-46		TAPPING SCREW	1.77	46	1.46	46	46	1	1 1 1		1.	1	1 .		
NB7-2605-46		I INFEIRG SQUEE	10	10	1 10						100	1	1		
N87-3006-46		TAPPING SCREW	3	3	1 3	3 . 3	3		T		ī	T	i	-	
N87-4006-46	- }	TAPPING SCREW	6	6	1	5 6	6 6		İ			i	ì	1	
N87-3010-41		TAPPING SCREW	4	4	4				1		1			<u> </u>	
N87-3006-41			1 1	1	1				T		1		1		
NB7-4008-46	10.0	FLAT TAPPING SCREW	2.	2					1.	1.	-	i	i	1	
N88-2606-46		FLAT TAPPING SCREW	2	2		2 2					-				
N88-3006-46 N89-3006-45		BIND TAPPING SCREW	4	4	1	. 4	4	• [	1	1	1	1	1	į.	
MRA-2000-43		DING THE THE			١.					1	1	1	ĺ	ļ	
SDT1000F		THERMISTER	1							-			+	<del></del>	
\$29-2409-05		VOLTAGE SELECTOR SWITCH	1			1			-	1			1	-	
\$31-1415-05	1	SLIDE SWITCH	1			1 3			1		1		i	1	
540-2450-05	1	PUSH SWITCH	+	1 2		2 2			+		+			1	
\$50-1406-05		TACT SWTCH (UP DOWN)	1 1	1					1		ļ.		ļ	1	
S59-0428-05	1	KEYBOARD ASS'Y DCS	1	١.	1	•			1				i.		
703-0027-15		SPEAKER	1	1		1 :	1 1							1	
T91-0331-05	. }	MICROPHONE (M,W)		1	100		1		1	1.		1		1	1
T91-0335-05		MICROPHONE (T)		1				- 111	4-					+-	
T91-0331-05	+	MICROPHONE (M,W)	1	, -			1 1		ĺ					1	
T94-0049-05		PLANGER	1	1	1	1 :	1 1	L				1		1	1
	1		<del> </del>		-	1	1 7	+-	+	-	+	+	+	+-	
W02-0364-00		ENCODER ASS'Y	1					1				-	1		
W09-0326-05		LITHIUM BATTERY	1	_		-	-	-	-		-	+	-		
X41-1580-01		SWITCH UNIT	i t	1 '		1	1								
X41-1580-62	ĺ	SWITCH UNIT	i	1		-	1 :	1	1			Ì	$\perp$		
X41-1580-01		SWITCH UNIT	1	177	100	1			+	-	-	_			
X43-1490-11		AVR UNIT	1 1				7   Proj. 1		5 1	H.			1		
X44-1650-11	N				ul.	1	1	1	1.5			L	-		
X44-1650-01	N	RF UNIT	1			1	-							i	
X45-1390-11	N	FINAL UNIT	1 -	1 :	ı l	1			ļ	1				1	
X45-1390-01	N	FINAL UNIT		Ι.		1	1	-							
X45-1390-61	N N	FINAL UNIT													

						D 1	STIN	CTIC	N 8	, Q.L	IANTI	TY				
PART.NO	N	DTE	NAME & DESCRIPTION	011	021	051		071								REFERENCE.NO
(45-1390-01 (48-1400-01		N	FINAL UNIT IF UNIT	1	1	1	1	. 1	Ì				İ			
(49-1180-00			AF UNIT	1	1	1	1	1	115,130	1,25						
X50-1990-12 X50-1990-01			PLL UNIT PLL UNIT HET UNIT	1000	1	1	1	1					10			Nach Hybrid (1997)
x50-2010-10		N _		1	1	1	1	1	2			· ·	-			
X50-2000-00			HET UNIT TONE UNIT		•	l i	1	•				1			1	
X52-1290-60 X53-1410-12		N	CONTROL UNIT	1	1	-		ļ								
X53-1410-22			CONTROL UNIT CONTROL UNIT CONTROL UNIT			1	1	-940	34.5	100		11.	4 4		.	
X53-1410-52 X53-1410-62		N	CONTROL UNIT	275	100	1,000	1		43.44	26						
X53-1410-22			CONTROL UNIT	1	1	1	1	1								
X54-1820-11		N	DISPLAY UNIT					L								
		`.		3												
e e e e e		. ja.,	구요 - 그는 10년 1일	<u> </u>	12		1				<u> </u>					
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		. 7.			1,38	1										
									9.1%							
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				100	1,7				20.00							
				180	34	My.	100		:	1						
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				+	1:-	<del>                                     </del>	<b>-</b>				-					
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1 11 1				├	-	+	<del> </del>			$\vdash$	<del>                                     </del>	<del>                                     </del>	-			
				-	+	+			<del> </del>	<del> </del>	<del> </del>		-			
	1					100			4	1: .						
		1311		-	-	16,6-7-0	18	<del> </del>	-		-	<del> </del>	-			
	T															
				-	-	100	1		<del> </del>		ļ		-			
	T							1000	l		1		1			
944 - 11 <u>11</u>		14		4-	-	1		122	1	-		-	<del> </del>		<del></del>	
						}		1			1					
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									1	1000			1744	100	0.00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
															1	
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# TS-811A/B/E PARTS LIST

SWITCH UNIT (X41-1580-XX) (-01 : K,M,X -62 : T,W)

		41-1580-XX) (-01 : K,M,X	1				NCII	ON	8 G(	LANT	TTY			T T T T T T T T T T T T T T T T T T T
PART.NO	NOTE	NAME & DESCRIPTION	001	061			1	T			T			REFERENCE.NO
91-0757-05	1016	CERAMIC 0.001 SOV	7	1	7	<del> </del>	-	1	-			·		i.
0, 5, 05	}		-		1				İ	i				1
06-1351-05	N	ROUND TYPE CONNECTOR 13P	1		1			i	İ			! i		1
40-5041-05		MINI CONNECTOR 5P	2		2		1				1			
40-5042-05	N≠	MINI CONNECTOR 8P	1	100	1 1		-						1.	
40-5043-05	N=	MINI CONNECTOR 12P	1		1 1		1.	1		1	L			
40-0273-05	*	MINI CONNECTOR 2P	2		2		1	1	1	1				
40-0573-05	*	MINI CONNECTOR 5P	1		1 1	ì		İ			-		i	
40-0673-05	*	MINI CONNECTOR 6P	2		2	1	1							
40-0873-05	*	MINI CONNECTOR 8P	1		1	1.	T							
40-0973-05		MINI CONNECTOR 9P	1		1		i					1 1		
40-1373-05	*	MINI CONNECTOR 13P	1	1.	1	j		Í.,			!	1		
RS14AB3A100J		METAL FILM 10 OHM 1W	1		1									R , 3
			٠.,	<b>├</b>	ļ,				<del> </del>	<u> </u>	-	<del>- i -</del>		15 , 3, 10, 11, 12
340-2440-15	1	PUSH SW	4		4				1			1 1		S , 3, 10, 11, 12
340-2441-15	]	PUSH SW	1 2		1 2			1	-	!		1		
\$50-2402-05	<u> </u>	TACT SWITCH				<del></del>	<del></del>	<del></del>		-	į –	<del></del>		S . 5, 6 S . 1, 2, 7, 8, 9
\$50-1412-05 \$50-1412-05		TACT SWITCH TACT SWITCH	5		4									\$ , 1, 2, 7, 9
02-0365-05	N	ROTARY ENCODER(RIT)	1	!	1					İ	:			
\$\$133	1	DIODE	8		8		1			i				0 , 1, 2, 3, 4, 5, 6,
			-				-	_		-	1	-		
			<u> </u>	<u> </u>										
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	<del></del>													

### **AVR UNIT (X43-1490-11)**

			Ľ_		D	ISTI	NCTI	ON.	AUD 3	NTITY			
PART.NO	NOTE	NAME & DESCRIPTION	011		1								REFERENCE.NO
CEO4W1C100M		ELECTRO 10 16V	4		T	1							C , 8, 9, 12, 20
CE04W1C101M		ELECTRO 100 16V	1		İ	1	1		1	1	1 1		C , 10
CK45B1H102K		CERAMIC 1000P 50V	10	i						- :			C , S, 7, 11, 14, 15, 17, 18
CK43BIHIOEK				1		1 7					T = T		, 24, 25, 26
C90-2004-05	N	ELECTRO 15000 25V	2	100	1.1		1		1 1	- 1	1 1		C , 1, 2
	N	ELECTRO 1000 25V	2	1		1	1	ľ	11				C , 3, 4
C90-2005-05	N	ELECTRO 1000 16V	1 1		<del></del>	<del></del>	<del> </del>						C , 22
C90-0817-05		ELECTRO 470 16V	3		1		!						C , 19, 21, 23
C90-0820-05			1			i .				-	i	i	C , 16
C91-0117-05		GERMITA	1		+	+		٠,	<del>  </del>		++		C , 13
C91-1008-05			i		1	1						1	C , 6
C91-0119-05		CERAMIC 0.047 50V	· -	100	least.	100	1.0						
DTC114ES		DIGITAL TR	1	<del>                                     </del>		-							Q , 12
E08-0373-05		MINI CONNECTOR 3P	1		-								
E31-3063-05	*	INSIDE CONNECTING WIRE	1	<del> </del>			1				!		
E40-5044-05		MINI CONNECTOR 2P	1		1	1	ļ	1		į	1		
	N×.	MINI CONNECTOR 6P	1 1		1	1	-	i		ì	1 1		
E40-5045-05		MINI CONNECTOR 2P	1 2	<u> </u>	1-	-				-	+		!
E40-0273-05		MINI CONNECTOR 4P	1		j					1	1		
E40-0473-05	*		1		1				1				
E40-0673-05	*	MINI CONNECTOR 6P		-			<del></del>				+		
E40-0773-05	=	MINI CONNECTOR 7P	1		i			i			1		
E40-0973-05	*	MINI CONNECTOR 9P	-			L							
F20-0078-05		INSULATING PLATE	1 2				i	i	l i	ï	! !	- 1	
F29-0014-05		INSULATING WASHER	2	1		[				Ì			
. 27 0024 02			ì	1	į	1	! .		!  _				
J13-0055-05		FUSE HOLDER	2		1		i				1 !		
J19-0306-05		HOLDER	1	i .	1	1 - 1					1 1	1	
317 0300 03			1		1 0				l i	1		i	
L15-0016-05		LOW-FREQUENCY COIL	2		1			-					L , 1, 2
213-0010-03					1						1 1		
MTZ6.2J(A.B)		ZENER DIODE 6.2V	1		1						1 1		0 , 6
MTZ8.2J(B,C)		ZENER DIODE 8.2V	1	T									0 , 5
M120.23(B)C)		12.12.1. 0.001	i	!						1	1 1	-	
NJM4558S		10	1		1	1 1				ı			Q , 10
NJM45363		10	<del>  -</del>		-	1							
242 4/30-05		TRIM.POT. 500 OHM	1		1					İ	j		IVR , 1
R12-1429-05		TRIM.POT. 1K OHM	1	1		1	!						VR 2
R12-1428-05	-	RESISTOR BLOCK 10 OHM 2W	Ž		+	<del> </del>			-		<del>  -</del>		R , 16, 17
R92-0674-05	N	RESISTOR BLOCK TO STIN ZW	ا د		1 .						1	1	1
		DECISION BLOCK	1	ļ								ļ	D , 1
\$10VB20		RESISTOR BLOCK	1		-	-					<del> </del>		
		• •	1		ł					1	1	- 1	Q , 8
UPC78M08H		IC	1		1							1	0 , 4
U053		DIODE	1		+	<del>  </del>			<del></del>		+		+* - *
			1		1	!				1		i	0 , 7
VD1223		VARISTOR	2	l	1					İ	1		0 , 2, 3
V06B		DICDE	1 2							<del></del>	+		V ' 6' 3
188133		3001D	2										D , 8, 9
					<del> </del>	ļi							Q , 1, 5
2SA1012(Y)		TR	2		i				l i	i	1 1	1	
2SA1048(Y)	- 1	TR	1								1	ĺ	9 , 7
2SC1959(Y)			3	<u> </u>	L						<del>i                                    </del>		9, 2, 9, 11
2SC2458(Y)		TR	3		1	1	. !				1 1	1	Q , 3, 4, 6
	i		1		į	1 1						i	
	- 1		1		I	1 }	. 1		1	- 1	1	f	1

# PARTS LIST TS-811A/B/E

RF UNIT	(X44-1650-	XX) (-01	: M,T,W,X	-11 : K)
BART NO	NOTE		DESCRIPTION	001 011

<del></del>						0	ISTI	VCT10	) N 8	الغا	ANT	17						CE ND
PART NO N	OTE	NAME & DES	CRIPTION	001	011													CE.ND
	UIE	CERAMIC 10	OP SOV	2	2								i	1	- 1		29,	30
C45SL1H101J		ULINAI12	5P 50V	1	1		1 1	1	1				- 1				16	
C45CH1HOR5C				2		i	ŀ	1 1				l i	-		- 1	С,	10,	28
C45CH1H050C	}	CERAMIC 5P				h	20.					<del></del>		-		C.	38,	42
C45CH1H060D		CERAMIC 6P		2		11.0	7.00 L	1000	100		200			. 49	1.83	č ,	- 5	74 (0. 41
C45CH1H100D	1.00	CERAMIC 10	P 50V	4							A		2.7.7.1	9.78	66			307 407 41
	200	CERAMIC 12		1 1	1.		1277		1.0	34	2.00	10.5			370		17	
C45CH1H12OJ	1114	CENTITIO		1	1												3	
C45CH1H330J				1	1	l		1				1				٠ 3	15	
C73ECH1H030C		CHIP CAP. 3P				1						1 1				٠,	1,	2
C73ECH1H330J		CHIP CAP. 33		2					ļ							Č.	Á.	12, 19
C73ESL1H101J		CHIP CAP. 10	OP 50V	3	1:07	3500	1	100.0			100	1	92	. ·			3,	12, 19
C73ESL1H101J	194 AT	CHIP CAP. 10	OP 50V	4.33	3			1.75	4.1		18.5		1.00					127 47
	10.00	ELECTRO 10	16V	1 1	1	dest.	1000	100			400		2, 5,			C /	2.6	
CEO4W1C100M			000P 50V	14	14			-								C ,	4,	8, 13, 18, 22, 23,
K4591H102K		CERAMIC 10	100F 30V	**	• "			ŧ	ì ·	1		1 1				,	31,	32, 34, 35, 37, 39,
				1 -		1	1	!	1		1		1	1				9, 11, 14, 20, 21,
K73EB1H102K		CHIP CAP. 19	00P 50V	9	9	<del></del>	-	-		-	<del> </del>			_	-		25,	
						1	1"	1 .	1	1	ļ			1	i .			33
COE-0071-45		TRIMMER 10	)P	. 1	1 1	1.1	1 :	1	1		1	1	1	ł-			2	_
005-0031-15			F	2			1	1	1	l	1	1	1	L		TC.	1,	
005-0308-05		IKIMMEK 47		+	-	+	1		_			1						
				1 .	4	1			i	1		1	ļ			1		
E04-0154-05		RF COAX. CONNECTO		4			i		į .	1	i		1	}	ı	l		
E31-2064-05		CONNECTING WIRE	(A)	1				-	<b></b>		ļ	<del> </del>						
£31-2089-05		CONNECTING WIRERA		1	1	1.7	1	Ĭ	1	1 1	1	1	1	1		Ι΄.		
E31-5003-03				after.	1.00	L3 -		100	1		1	ľ	1.	1		l		
			ONED	2		I i	1 5 5	1.75	11.5	1000	100	No.	1	1	100	L .		. 3
L19-0309-05	1. 2. 14.	WIDE BAND TRANSFO	AND R	1		1		+		-	1					L	- 8	
L34-0824-05		10010	5 2.57				1	1		1	1	ŀ	1	1	I		18	
L34-0825-05		COIL	2.57	1			1	1		1	1	1		1	I	1 2		19
L34-0908-05			9.5T	2				1	1		-	1	ļ.,	Ь				
		COIL	1.51	2	2	1	15.5	1	15.		1	1			ł		9,	. 11
L34-1052-05		1201	25T	1		1. 19. 6	P3.	1.	1300	1.97	1	1	ľ.	1	1		10	
L34-1083-05				2			1.8			f	1					L	15,	17
L34-2038-05							+	-	1	+	+	+	<u> </u>	-			1	
L40-1091-03		INDUCTOR 1		1	1	1		1	1	i		1		1	1		12	
L40-1092-14		INDUCTOR 1	uH .	1			1	1	1	1		1		1	i			
			2.265MHZ	1		1	1	1				1		1	1		16	
L71-0248-05		11101		1 3		T	1			1	T						5,	
L79-0649-05	N	HELICAL		1 -		1:	1	1	1	1	1	1	i	1	1	L	. 5,	6, 7
L79-0658-05	N	HELICAL BLOCK 4	50-45UMHZ			1.1	i	1.	1	1	1	1.	1	1	l .		13	
L79-0619-05	1	HELICAL		1		+ -	+	+		ļ	+	<del>-</del>		<b></b>			13	
L79-0659-05	N	HELICAL BLOCK		1	1	į	1	1	1	1	1	1	1	1	1			
	l "	HELICAL		1 1	. 1	1	1	1	1	1	1	1	1	i	1		14	
L79-0620-05	۱.,				1 1	1	1	1		1	1	1	1	1	l	L	14	
L79-0660-05	N	HELICAL BLOCK		+			+	1	1	1	1	1	1	1		L /	2.0	
L92-0110-05		FERRITE CORE				.4	122	1 :	1	1	1	1	1 :	1	1	1 '		
	1	<ol> <li>St. B. L. W. W. Weight</li> </ol>				100	1	Jack	1.8	1,40	11.	10.1	1.1	1		D	. 4,	. 5
MA856	100	DIODE		2		4	1	4	1	1	1	خسب	100					
MA856		DIDDE			1		1		1	1	1	1	1	1	1			
	ļ	VARISTOR		1 1	. 1	1				1		i			1	D .	, 2	
MV13	1	AWETSION		1 '	1 7		1	1	1	1	1	1	1	1	1	1		
					+	+	4000	1	+	+	+	1 7	100	1	1	D .	, 1	
ND487C1-3R	1	DIODE		1	. 1	1325	dina i	1.1	1	180.0	122	1 - 1	100	1	1	1 '	-	
	1 13			3 32	1.8%.	1888	1 - 2	#33°	1 2	1800	1.	Τ.	1.0	1	1 .		. 1	
R12-0433-05		POTENTIOMETER 2	00 QHM	_ 1	1 3	<u>J 600</u>	4 5 5	1	1	1	1	1	1	1	<u> </u>	VR.	, 1	·
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188133	1	DIODE			1		1	1	1		1		i		!	lo .	, 5	
15597	1	DIODE			<del>.   1</del>	4	+	+	<del></del>	+	+	+	1-	+	+	+		
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22059	Latte			8 L - 3	1		17.	470		1	1.35	4533	100	1	1.85.	Q.	, · · 5.	and the first state of the stat
25C2458(Y)		TR	and the second of the second					+	+	-	1	1	_	!		a .	, 3	
25C2570A	1	TR					1	1	1	1	1	1	1	l	1	Q .	. 4	
2502762	1	TR		1 1	ıl 1	. 1		1	1	1	1	1	i	i	i			
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		5-1390-XX) (-U1 : M,X -11	7			DIS	STIN	CTIC	N (	& Q	UANT	1 T Y				_
	NOTE	NAME & DESCRIPTION	001	01	1 0	51T	<u>_</u>									REFERENCE.NO
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E04-0161-05	+-	UHF RECEPTACLE			1	1										
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E29-0440-14		GND WAFER		4	1	1		<del></del>	_	1	-	1		<del>                                     </del>		
F01-0917-05		HEAT SINK			1	1	- 1						ì			
F09-0405-34		FAN			1	1					ļ			ļ		<del></del>
F20-0078-05		INSULATING PLATE			1	1				1 '	1	1	1	1		
F29-0014-05	1	INSULATING WASHER	- 1	1	1	1					1			1 3		
127-0014-03	1		_1				_								ļ	
G02-0549-04		SPRING FOR MOTOR		ï	1	1					1	1		İ	ļ	
. 7. 4.4.7 05		CHOKE COIL 1.5T		ı	1	1								ļ		L , 5
L34-1113-05		COIL 3 9.5T			1	1						T		1		L , 2
L34-0908-05	i	COIL 3 3.57		1	1	1	- 1			1	1			ļ	1	L , 4
L34-1032-05	i	COIL 3 2.ST	1 :		1	1				1	1		1		100	L , 3
L34-1019-05		COIL			2	2	i							1		L , 1, 6
L34-1040-05	i	-				1	- 1			i	i			ì		L , 7
L40-1092-14		INDUCTOR 1 UH							<u></u>	L.	<u> </u>					
MI308		DIODE		-	1	1									1	0 2
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R12-0541-05	1	TRIM.POT. 100 DHM			1	1	- 1			1						VR , 1
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				1	,	1		10	160	1						TH . 1
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T42-0302-05	1	DC MOTOR	T-		1	1									1	
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+23122	1			1	1	- 1.				174	M.	100	1	10.0	20	1. 自動性臓 スープー リアーコー
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	ĺ	TR		۱ ا	1	1						1		Ì		Q , 3
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250717	_1	1)			_											

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IF UNIT (X48-1400-01)

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CC45SL1H22OJ		CERAMIC	2 2 P	50V	3			1					1	i			1,118,185
CC45CH1H100D	1	CERAMIC	10P	50V	1			1	<u> </u>	<u></u>							,119
CC45SL1H470J		CERAMIC	47P	50V	3			There is	150	1				[.			. 69,106,107
CC45CH1HOR5C		CERAMIC	0.5P	50V	2		1.00	100%	100			; !			1.		, 7, 31
CC45CH1H180J	1	CERAMIC	18P	50V	1		1	1	1								, 18
CC45SL1H121J	-	CERAMIC	120P	50V	1				1					- 1	ì		,165
CC45CH1H220J		CERAMIC	228	50V	1		1					Į į	i	- 1	-		,114
CC45CH1HOR5C		CERAMIC	0.5P	50V	2		1	i	ļ		ļ	1		1.			, 8,115
CC45SL2H470J	<del></del>	CERAMIC	47P	500V	1		1	1		7						C	.122
CC45CH1H020C		CERAMIC	2 P	50V	1	1577	i mili	17.	1.15	1111					1	C	,103
CC45CH1H330J		CERAMIC	33P	50V	2		100	100	1807	13.	1	1			- 1		. 3, 37
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CC45SL1H221J		CERAMIC	7 P	50V	1		<del> </del>	+	+	<del>                                     </del>	<del> </del>	<u> </u>	<del> </del>			C	, 91
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CC450H1H080D		CERAMIC	2P	50V	1		<del>                                     </del>	+	-		<del> </del>		<del> </del>		<del></del>	C	. 14
CC45UJ1H020C		CERAMIC			1		1		1	ĺ			1	1	j	C	, 13
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CEO4W1C100M		ELECTRO	10	16V	3		1	1. 1.	1	ľ	1	1			- 1.	C	
CE04W1C220M		ELECTRO	22	16V	1			527 3			1.					C	180
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CK45B1H331K		CERAMIC	330P	50 V	1		1	1	ļ	1	1	1	1	i	i	C	,131
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CQ92M1H103K.		MYLAR	0.01	50V	1	1 . 5		1.		1	1	1	1	1 1		C	.176
CQ92M1H153K		MYLAR	0.015	50V	1	1.5	1:	1	1	i	į	1	i			C	.160
CQ92M1H223K	-	MYLAR	0.022	50V	1		1				-	1				C	,169
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C91-0667-05		CERAMIC	0.01	50V	6			100	1		11.	1	1			c	, 2, 10, 17, 67,112,137
C91-0117-05		CERAMIC	0.022	SOV	11		137.	100	1		1	1:	Į.	1 1		Ç	, 33, 49, 56, 62, 63,102,12
C91-1008-05		CERAMIC	0.022	,,,,		+	+	1	+	<del> </del>	<del></del>	<del>                                     </del>	<del></del>	<del>  </del>		<del></del>	,125,146,149,150
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C91-0117-05	1	CERAMIC	0.01	J U V	1 14	1	1	1	1	1			1		1	1 -	,111,116,117,139,114

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PART.NO	NOTE	NAME & DESCRIPTION		011								L			REFERENCE.NO
091-1008-05	1	CERAMIC 0.022 SOV	32												C , 20, 21, 22, 34, 9, 53, 54, 55, 58, 60, 72, 13, 75, 74, 84, 93, 95, 96,100,104
091-0119-05		CERAMIC 0.047 50V	3	-	-	12.5	1-7-1-			-	1	<del></del>			C ,109,113,142
C91-0119-05 C91-0457-05		CERAMIC 0.022 50V	Z	1.5	135.		155		ł		1 4			1	C 282 66
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		CERAMIC 0.047 25V	-	1	i .	1	!		1			1		ł	C , 40
C91-0119-05		CERRAIC 0.041 EST	1	-	<del></del>	-	1.				_	T			
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E04-0154-05		RE COAX. CONNECTOR RAPHET, DO	2				1							- 1	
E23-0512-05		TERMINAL 1P	4		1	1	1		1			!	!	1	
E40-0273-05	_ L	MINI CONNECTOR 2P	6			<del> </del>			<del></del>				<del> </del>		
E40-0473-05	*	MINI CONNECTOR 4P	1		1	1			1			1		İ	
E40-0573-05	*	MINI CONNECTOR 5P	4				1		1		1	1		Í	
E40-0673-05	*	MINI CONNECTOR 6P	1		<del>ا</del>	<del> </del>						<del> </del>			
E40-0773-05	*	MINI CONNECTOR 7P	1		ĺ	1			l	1		j		1	
E40-0973-05	•	MINI CONNECTOR 9P	2			<u> </u>	<u> </u>								
G02-0535-04			3												L , 13, 14, 15, 18
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L30-0503-05		IFT	3				1					i	1 1		L , 25, 27, 33
L30-0504-05		IFT	1			ļ			<u> </u>						L , 5
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L34-2038-05		TUNING COIL	4	-					-	<u> </u>	<del> </del>				1, 1, 2, 3
L34-2041-05		TUNING COIL	3	1	l	Ì				Į.		i	1		23, 28, 29
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R12-1429-05	- 1	TRIM.POT. 500 DHM	1	1	1	1					ļ				VR , 6
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IPC577H(E,F) IPC4558C		10	î				Ì						1			. 4						
	-	DIODE	4	1988	30	739	300	82	994		1.12	70			D	/ . 1	٥,	11.	12,	13		
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112-102-2	+	THERMISTER	1								Г				D	,	1					
	1							ļ	į						a	, 5	6,	58,	59			
2CS2458(Y)	J	70	9	+		1000	19.0			-	1			7.	Q	, 1	1,	12,	13,	15,	16,	17, 1
25A1048(Y)		TR	100									13.3			_	, 2	7,	60				
2SC3113(B)		I I K	2		S 26	10.7		12.		_	-				Q	, 5						
2SC2668(Y,O)		TR	5									İ			Q.	,	4,		38,	40,	48	
2\$C2668(Y) 2\$C2240(GR)		TR TR	1												G.	, 2	9			27	7/	28, 3
25C2458(Y)		TR	23	100			2.5							J	Q	′.	5,	33.	37-	39.	42.	43, 4
	1	사용기를 보는 기를 <u>기록 하는 사</u>	18.4		100	3.16						8.6		-		1.4	9,	50,	51,	52,	53,	55
2 S K 1 2 5		FET	1												Q	, 3	5	25,		-		
2 S K 3 O A ( O )		FET	3 2		1				İ									7				
25K161(GR)	+	FET	<del>  '</del>	+					14,115		1	<del> </del>						-				
35K73(GR)		krety: State of the same and the same	6							120						, 3		8,	20,	21,	22,	32
35K73(Y)		FET	1	+	-	-			-	-	1		+		<u>u</u>							
				İ	l						:											
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	+	1. Francisco (1911 - 1912)	1		T						- 3											
			lain.		130	144	13			M		100			100							
		10 10 10 10 10 10 10 10 10 10 10 10 10 1	+-	+	1		122			H	+	<del>                                     </del>		-								
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			+	+	<del> </del>		-			-		<del> </del>	-	-								
	1. 55		1.5	dist.	t wi	60,1		0.4	- 3	100	Ea	1		100					7			
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<del> </del>	+-		1	18.24		7.5.5.	100			100	1	1.14		1								
	t (%).		134					G.	l XX	100	d mile		19		1.30			1				
		CONTRACTOR OF STREET	+	120	1		3.150	1-4-20		1	+	۲	1	-								
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PART.NO	NOTE	NAME &	DESCRI	PTION		000	Γ.									I		REFERENCE.NO
C45SL1H390J	1014	CERAMIC	39P	50V		1				T		Ì	İ	1	1		-	C , 32
C45SL1H101J	1	CERAMIC	100P	50V		3				ì					3	1	1	C , 2, 3, 45
E04W1E4R7M		ELECTRO	4.7	25V		2		ļ		i	l	İ				ــــــ		C , 20, 21
		ELECTRO	10	16V		7	1	9700	. e		1.5				130	1.00		C , 6, 8, 9, 10, 17, 40, 5
E04W1C100M	1	ELECTRO	22	167		1		100	188.0		13117		1.56%		13.3		10.00	C , 7
:E04W1C22OM			47 .	100		5	1 - 1	10.00			Lamber 1		1465		1			C , 5, 22, 25, 46, 56
E04W1A470M		ELECTRO		10V		1	1-		_	<del>                                     </del>	-	-	+	+	+			C 47
E04W1A101M		ELECTRO	100			1 1	1		1	1	1	1	1	i			i	C , 27
E048W1HR47M	1	ELECTRO	0.47	50V				1	i	1	1	1		i		i		C , 4, 11, 13, 14, 15, 16, 1
E04W1H010M		ELECTRO	11	50V		18		<del></del>	<del> </del>			ļ	+			+		, 19, 26, 28, 29, 35, 37, 3
	_					10	100	1.5	150		100	1.5	1.75	1.00	100	133	21.	41, 42, 48, 53
					- 11 J. (4)	18.00	100	100	136		4.24	Late an				10.75	100	C , 23, 24
E04BW1H010M	1	ELECTRO	1	50V	- A - E-	2		1 1 1	3.0		100			0.7	-	-	1 22 2	
K45B1H471K		CERAMIC	470P	50V		1	1		1		i			i	į		i	C , 43
	ĺ	CERAMIC	560P	50V		1	İ	1	1		i .				(	i i	1	C , 31
K45B1H561K		CERAMIC	1000P			1 5	1	1	1						1		1	C , 36, 39, 44, 61, 63
K45B1H102K			1500P			1		-		1	T		1		1			C , 33
K45B1H152K		CERAMIC	3300P			l i			1.0	l	1.5					1 4		C , 12
Q92M1H332K	1	MYLAR				li		1	1 1		1	1			( )	1 .		C , 34
Q92M1H103K		MYLAR	0.01	50V		+ 4	<del></del>	+	<del>                                     </del>	+	+-	<del></del>	+	_	1	1		C , 54, 55, 57, 58
Q92M1H123K	1	MYLAR	0.012			:			1	1	1	1	i	1			1	C , 50
Q92M1H104K	1	MYLAR	0.1	50V		1		1	ļ	1	[	i	1	1	1	1	1	C , 59
S15E1VOR1M	1	TANTALUM	0.1	35V		1		<u> </u>	<u> </u>	-	<b></b>	4	ļ	1	<del>,   </del>		<del> </del>	
S15E1C3R3M		TANTALUM	3.3	16V		1			1	1	1	10.0	19.3	1	1			C . 60
90-0882-05		ELECTRO	220	25V		1 1	12	t	1000	19:35	1.00	1,00	9,12		10.00	1	1	C > 51
	ŀ	ELECTRO	470	16V		1. 1			1. 1	18.85	1	1999	100	1 1				C , 49
90-0820-05		ELECTRO												1		T	1	
	ļ					1	į.	i	1		1			1		Ì	1	
E40-0373-05		MINI CONNECTO				1		1	1					ł	1			,
40-0473-05		MINI CONNECTO	JH 4P						+	+	10,710	1	+	-		+	1777	
-40-0573-05	*	MINI CONNECTO				2				1.5		10.0	100			4:	1	
E40-0673-05	*	MINI CONNECTO	P 6P			1	1		.80		1 :	196	1.1		1		1	
E40-0773-05	i *	MINI CONNECTO	)R 7P			1 1	L		<u> </u>	<u> </u>		1	1. 6	-	1	-	<u> </u>	
E40-0773-05	*	MINI CONNECTO	R 9P			1	I -		1						1		-	
240-09/3-03	1 -					1	1		1	1				1	1			ĺ
	1	10				1 1	1		1	ł	1			1		1		Q , 11
MB3713						2	-		1	1	·	1	1		1		1	D , 2, 8
M C 91 1	1	DIODE				1	1		1			1		1.		100	1 -	0 11
♥C921	1	DIODE				1 -		1			1.	1.6	1 .	1		1	ł .	
	i					+	<del></del>	+		+	-	<del> </del>		+	<del>}</del>	+	1	G , 4, 9
NJM4558S		10				2		1	i			1			i		1	' ' '
N30-3004-46	i	PAN HD SCREW				1			ł	1	i i	1	-	1	l .		1	
1,50 5000						1			L	<del> </del>		ļ		<del></del>	<b></b> -	ļ	<del> </del>	
R12-3443-05	-	TRIM.POT.	10K 0	HM		2		1	1000	1 55	1			100	Į.		1	VR , 1, 3
	1	TRIM.POT.	50K 0	HM:		1 1	1	1.4	L. O.	1		100	1	1.1	1	1.7	1::	VR 4
R12-4413-05	1	TRIM.POT.	10000			1	150		100	100	1.5	12.5	1,11,	11.1	1	1.50	1	VR 2
R12-5420-05	<del></del>	IRIM.PUI.	10000			<del> </del>	<del>                                     </del>	1	_	1	1	1	-	_	1			
	1	1				1	1	1	1	1	1	1	1	ł	1	1	1	a , 5
UP(1158H2	1	10				1 *		1	1	1	1	1	1		1	ļ	1	l
						+	<del> </del>	<del> </del>	<del> </del>	1. 2.	100000	23.23.2	14.50	+	+	+	1	D , 5
1 N 60		DIODE				1		1	1 : 1	14.3	1	1	1	1	1 :	las.	1	0 10
1 55133	1	DIODE				1		1. 1.3	1: 0	15 5	11:1	1.00	E G			95	1.1	D 10 3, 4, 6, 7, 9
155133	1	DIODE				6	L:			1916	1	1		1 17 17 1		<del></del>	1	U 11 31 41 01 12 9
122122	+							1	1	1		1				i	1	l <u> </u>
	1	TR				2	1	1	ł	1	1	1	1	1	1		1	Q , 2, 13
25A1048(Y)	1	TR				8		1	1	1	1	1	i	1	1	L	1	Q , 3, 7, 8, 10, 12, 14, 1
25(2458(Y)		1 K				╅┈ਁ	1	<u> </u>	100	17.7	1		1	1	100	15.5		. 16
	1 .						100	1.5	his is	1	1000	10000	Contract of	يتنادانا	diam'r.	1300	Mar.	Q 1
25(2459(GR)	1	TR FET		Alten.		1	10.00			1	1	1	188		1: 1	1000	13000	0 . 6
2 SK30A (GR)	1	FET	1 4	149 . 15	e 186	1 1	100,000	200	1	1	990000	1-933333	(39230)	17 (18)20	130.00	100000	+	<b>4</b>
	-					1	i	1	1	1	1 .	1	1	I	1	1	1	
		1					1	1	1	1	1	1	1	1	1		1	1
	t	Į				1	1	1	1	1	1	1	1	1	1	1	1	ı

# TS-811A/B/E PARTS LIST

PLL UNIT (X50-1990-XX) (-01 : M,T,W,X -12 : K)

										NCTI	ON	8 0	JANT	ΙτΑ				
PART.NO	NOTE	N	AME & DESCRIP	TION		001	011	012		T		1						REFERENCE.NO
CC45CH1H060D		CERAMIC	68	500		1		1				1						C , 9, 91
CC45CH1H060D	i	CERAMIC	6P	50V		i	1	1	1				!	i				C , 91
CC45CH1H010C	1	CERAMIC	12	50V		1		1	]			1		l i				C ,125
CC45CH1H070D	1	CERAMIC	7 P	50V	1	1	1	1	111	100			1					C /110
CC45SL1H470J		CERAMIC	47P	50V		. 4		4			100	{	1 .	:- 1		1	1	C , 14, 32, 89,161
CC45CH1H050C		CERAMIC	5 P	50V		2	١	2	1		!	1	1			1		C , 66,152
CC45CH1H060D		CERAMIC	6P	50V		1		1	1		1							C ,120
CC45CH1H1000	İ	CERAMIC	102	50V		2		2	1		1	i i	1	1				C /137/158
CC45CH1H180J	1	CERAMIC	18P	50V		3		1 -	1	1	ì		i					C , 30, 81,119
CC45CH1H180J	-	CERAMIC	18P	50V			!	4	1	-	1		<del> </del>					C , 30, 81,119,164
CC45CH1H080D	į	CERAMIC	8P	50V		2	ì	2	1	1.	1							C: 296,155
CC45SL1H101J		CERAMIC	100P	50V		2		2	ľ	1	1		10	1 1		1		C ,146,160
CC45CH1H15OJ		CERAMIC	15P	50V		1		1	<del> </del>	+	<del> </del>	<del> </del>	+			<del></del>		C , 95
	1	CERAMIC	2202	50V		i		1	į.		1	1				1		C ,104
CC45SL1H221J			10P	50V		i		1				1		1		i i		C ,135
CC45CH1H100D		CERAMIC	27P	50V		1		1	<del></del>	+	<del>! -</del>	, ,,,	<del></del>			<del></del>		C /118
CC45UJ1H270J	i	CERAMIC	330P	50V		1					1 -	1	i	1		i		C , 46
CC455L1H331J		CERAMIC				1		1	] :	1 3 1		í	i			1		
CC45CH1H15OJ		CERAMIC	15P	50V		2			-	+	<u> </u>	<del>-</del>	+			+		C , 65 C , 52, 54
CC45CH1H180J	į	CERAMIC	18P					2		Į.	j	1	!					
CC45CH1HOR5C		CERAMIC	0.5P	50V		3	ł	١.	1	i	1	1		1				C ,144,162,169
CC45CH1HORSC		CERAMIC	0.52	50V			<u> </u>	2	<del></del>	<u> </u>	;	<del> </del>				-		C ,144,162
CC45CH1H22OJ		CERAMIC	229	50V		2		2	1	İ	i	1	i					C ,136,148
CC45CH1H22OJ		CERAMIC	22P	50V		4	į		1			1	!	i l		1		C , 20, 22,165,171
CC45CH1H22OJ		CERAMIC	22P	50V			1	3				1	<u> </u>					C , 20, 22,171
CC45CH1H030C		CERAMIC	3 P	50V		4		4			i	ł		: :				C , 21, 44,124,151
CC45CH1H270J		CERAMIC	27P	50V		1		1	1		}	1	1			1		C , 43
CC45CH1H040C		CERAMIC	4 P	50V_		1 1		1		1	Į.		!					C _ , 64
CC45CH1H27OJ	1	CERAMIC	27P	50V		3		3	1	Ī		1	1			i		C , 10, 50,121
CC45CH1H330J	1	CERAMIC	33P	50V		, 2		2		i :		i	i			1	1	C ,128,129
CC45CH1H330J	1	CERAMIC	33P	50V		3	į	3	į .	ļ	ţ	1	!	1		1.		C , 3, 40, 85
CC45CH1H050C	<del> </del>	CERAMIC	SP	50V		1		1		!		1	1					C ,147
CC45CH1H050C		CERAMIC	5 P	50V				2	ł	i	1	1	1	1 1		1		C , 9,147
CC45CH1H680J		CERAMIC	68P	50V		1		1		1	}	Į.		1 1		ļ		C , 45
CC45SL1H390J		CERAMIC	39P	50V	,	4	T	4	1	1	1	1	1			7		C , 82, 84, 86, 88
CC45SL1H470J		CERAMIC	47P	50 V		4		1 4		1	1			ŀ		ļ		C , 4, 84, 87,127
CC45CH1H12OJ		CERAMIC	12P	50V		1		1	į.	}		1	1	1		1	(	C ,174
CC45SL1H050C	_	CERAMIC	5 p	SOV		1		1				ļ						C /178
CC45SL1H330J	1	CERAMIC	33P	50V		1		1		1		1	1					C ,179
CC73ECH1H080D	!	CHIP CAP		50V		1		ì		ļ	1	1	1			1		C , 63
CC73ECH1H220J	+	CHIP CAP		50V		1		1		+		1	1	-		1		C , 1
CC73ECH1H070D	1	CHIP CAP		50V		î		i	1	;	1	[	1					C , 62
	İ	CHIP CAP	•	50V		1		l i		1		[	i			1		C , 60
CC73ECH1H160J CE04W1E4R7M	<del></del>	ELECTRO	4.7	25V		1		1	<del> </del>	+		+	<del></del>			· · · · ·		C , 58
		ELECTRO	47	10V		5		5	!	1			1			1		C , 77,107,113,116,150
CE04W1A470M		ELECTRO	100	100		3		3		i	į		1			1		C , 69, 99,122
CEO4W1A101M	+	CERAMIC	1000P	50V		10		10	-	+		+	<del></del>					C , 8, 11, 13, 57, 94, 97,102
CK4581H102K		CERAMIC	1000	J 0 V		1 .0	ļ	10	i .	1		ľ						117,145,166
				50V		4		4		1 :	1	1	1			1	1	C , 47,138,143,156
CK45F1H103Z	-	CERAMIC	0.01	50V		1 1	├		-	<del></del>		<del> </del>	-			+		C ,175
CK4581H331K	1	CERAMIC	330P					1.	1		1	İ	1	1		1		
CK4581H681K	1 1	CERAMIC	680P	50V		2		2	1	1	1	1	1	1		1		
CK4581H102K	1	CERAMIC	1000P	50V		- 9	ļ.,	<del></del>		<del> </del>		-	ļ	ļ		<del> </del>	<del>   </del>	C , 2, 6, 7, 12, 59, 68, 70
CK45B1H102K		CERAMIC	1000P	50V				9			. :	1			ķ.			, 71, 92,131,167 C , 6, 7, 12, 59, 68, 70, 92
CQ92M1H222K	+	MYLAR	2200P	50V		1		1	<del>                                     </del>	1	<del>                                     </del>	ľ	1		-			C , 74
CQ92M1H822K	i	MYLAR	8200P	50 V		1		.1				j		1				C ,114
CQ92M1H223K	i	MYLAR	0.022	50 V		1	!	1	L	!	1	1	1	i '		<u> </u>		C , 75

						7577	NCTI	ON		UANT	7 T V			
PART.NO	NOTE	NAME & DESCRIPTION	001	011	1012		NCII	IN	<u>s u</u>	UANI	1 1			REFERENCE.NO
CQ92M1H473K	10.2	MYLAR 0.047 50V	1	· · · ·	1			1	+	+	1			C , 56
CQ92M1H683K		MYLAR 0.068 50V	1	ł	1 1			1	1	i	1	1	1	C -111
CS15E1VR22M		TANTALUM 0.22 35V	1	1	1				]	İ				C , 49
CS15E1VR47M		TANTALUM 0.47 35V	1	77.	1		+	<del> </del>	17.	1	1	1		C , 78
CS15F1E010M		TANTALUM 1 25V	2		i ĝ		13		1	1.	1	1		C , 72, 73
	1	TRIMMER 6P	1	200	1		1	1		1	Į		į	TC , 2
CC5-0062-05		TRIMMER 20P	1 1	<del> </del>	1		<del>!</del>		┼		1	-		TC , 1
005-0030-15			2		2		1	1	1			1 1	- 1	TC , 3, 4
C05-0067-05			15		15			1	1				- 1	C , 5, 19, 23, 24, 29, 33, 3
C91-0117-05		CERAMIC 0.01 50V	1-13		1 13		1	-	<del>}</del>		<del></del>	<del></del>	i	39, 51, 76, 79, 90, 96,12
			İ	1:	1	i	1	ĺ			1	1	i	154
		CERAMIC 0.01 50V	7	ľ	7			1:		ł	1			C , 41, 48, 53,108,115,1 26,14
C91-0117-05		100000000000000000000000000000000000000						<del> </del>	-	-	-	-		10 , 15, 17, 25, 26, 27, 28, 3
C91-1008-05	i	CERAMIC 0.022 50V	23	1	23	[	1	i	İ	ì		i 1		
,	1				1	ļ			1	!	-	1 1		, 36, 37, 38, 55, 80,1 05,10
				<u> </u>	-	<u> </u>		-	<u> </u>		-			,112,132,133,134,140,1 53
C91-1008-05	i	CERAMIC 0.022 50V	i	l	i				İ	ł	1	1 3		C ,172,173,176
C91-1008-05		CERAMIC 0.022 50V	į	15	1	1	i	1		-	1	1 1	1	C . 16, 18, 31, 42, 98,1 00,10
			1			<u>:</u>		<u> </u>	L		<u> </u>			,130,139,141,142,157,1 59,16
				!		:		į	İ	i		i l		.168
C91-0498-05	1	CERAMIC 0.35P 50V	ł		1	1	i		į	i			ļ	C ,169
			<del> </del>		ļ	ļ.,	·		ļ		<b>└</b>			
E04-0154-05	-	RF COAX. CONNECTOR RAPHET, DO	1		1						i	1 1		
E23-0512-05		TERMINAL 1P	9	ĺ	9	1			1		į	1		
E33-1641-00	_!		1	L					1		ļ			
E40-0473-05		MINI CONNECTOR 4P	2		2		į		ĺ	ĺ	İ	i i	1	
E40-0673-05	*	MINI CONNECTOR 6P	1		. 1				l			i 1		
E40-0873-05	*	MINI CONNECTOR 8P	1		1			<u> </u>	<u> </u>	<u> </u>		!		
F11-0818-14		SHIELD CASE(VCO TOP CASE)	1		1									
130-0289-05	+	IFT	1		1				1			1		L , 44
L30-0281-15		IFT	2		2			1				1		L , 9, 13
L32-0624-05		OSCILLATING COI	1		1			;						L , 21
L32-0639-05	+	OSCILLATING COIL SOMHZ	1		1			1						L 33
L33-0647-05	1	CHOKE COIL: 18 UH	1		1				1 [			1 1		L . 14
L33-0668-05	1	INDUCTOR 3.3 UH	1		1		!				!			L , 20
L34-0894-05	+	COIL 3 ST	2		2			_				1		L , 25, 26
L34-0908-05		COIL 3 9.57	3		3			1			1			L , 24, 27, 35
L34-1033-05	1	COIL 3 8.5T	3		3			1 1	i i		}			L , 1, 2, 3
L34-0683-05	+		1		1		_							12 , 4
L34-0749-05	1 : 1	TUING COIL	2	1 1	ş								1	L , 45, 46
L34-2041-05	1.	TUNING COIL	2		2			i i			1	1 1	- 1	L , 47, 48
L34-2232-05	- N	TUNING COIL 51,2MHZ	2		2		-	!	<del>   </del>		$\vdash$	-		1 , 39, 40
L34-2232-05	1 "	TUNING COIL SI.ZMAZ	2		2		i	[			ļ	1		L , S, 7
	i	TUING COIL	1		1	!	!		1		1		ı	. 6
L34-3066-05	1		3	- 22	3	-		-				<del>   </del>	<del> </del>	L , 37, 38, 43
L40-6891-03			. 2		. 5			-	1 1					L , 37, 38, 43
L40-1011-17	1. 1	INDUCTOR 100 UH	2		2									12, 15
L40-1511-03		INDUCTOR 150 UH	2											1 , 30, 31
L40-3311-03		INDUCTOR 330 UH	3		2						1			L , 11, 16, 18
L40-1021-03	[	INDUCTOR 1 MH										1 1		
L40-1092-16		INDUCTOR 1 UH	1		1				L				<del></del>	L , 22
L40-1011-14		INDUCTOR 100 UH	2		2	ı. İ					İ		1	L , 23, 36
L40-4711-13	1	INDUCTOR 470 UH	1		1	21.8		1.0		4			. :	L , 42
L40-1011-13		INDUCTOR 100 UH	1											L , 49
L72-0346-05	N	CERAMIC FILTER SFE11.025MJ-A	2	•	2				l i		1	1	- 1	L , 8, 10
L77-0950-05		XTAL 10.6965MHZ	1		1	- 1							- 1	L . 17
L77-0951-05	1	XTAL 10.6935MHZ	1		1									L , 19

# PARTS LIST TS-811A/B/E

					DI	STIN	CTIO	N &	QU	ANTI	TY			
2125 112	HOTE	NAME & DESCRIPTION	001	011				Ī						REFERENCE NO
PART.NO 77-1255-05	NOTE	TCXO 10.240MHZ	1		1									L , 41
79-0644-05	N	BPF BPJB3	2		2									L , 28, 29
4856 C145155P*K	100	DIODE	1 1		2 1 1									Q , 21
C145156P C921 C921	-	DOUBLE DIODE	2		2									Q , 6, 8 D , 7 Q , 23
54459L	ļ	I C	1	22	1			7.00	_					Q , 23
JM78LOSA			3		1		l.een			3,44				VR , 1, 2, 3
12-1405-05		TRIM.POT. 1K OHM	3		3								İ	Q , 3, 4, 6, 31
N 16913P N 74L S 9 0 N	-	IC IC	2		2									Q , 22, 36
A7302P	-	IC	1		1	-	-					-	-	9 , 30
P8555C		10	1		1								,	0 , 20
SV50		DIODE	3		3	:								0 , 15
SA1048(Y) SC2459(BL)	-	TR TR	3 3		3 3									Q , 12, 14, 25 Q , 13, 26, 27
SC2459(BL)		TR TR	4		4	İ								Q , 9, 34, 35, 39 Q , 16, 33, 38
SC2458(Y) SC2787(L) SC2668(Y>0)		TR TR	3		3 1		**				1.	1.5		Q , 7, 8, 41 Q , 24
SC2668(Y,0)	İ	TR .	6		1 6 1									Q , 32 Q , 5, 11, 17, 18, 29, 40 Q , 1
SC2668(Y) SK192A(GR) *N		FET .	2		5	١.								0 , 10, 28
SK73(Y)	-	FET	1		1	-	<u> </u>							Q , 2
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PART.NO								ISTI			દે વા	JANT									
	NOTE	NAME &	DESCRIPT	ION	000												FERE		0		
C45CH1HOR5C	10. 1	CERAMIC	0.5P	50V	2					İ					1		, 14,		7.0		
C45CH1H050C		CERAMIC	5 P	50V	3			١. ا						l l	ļ	c	, 15,				
C45CH1H100D	1	CERAMIC	10P	50V	3												23,				
C45CH1H22OJ		CERAMIC	22P	50V	2		7.				24.	100	3.4		3 1	 C	1.231	- 20	18, 3		
C45SL1H101J	1	CERAMIC	100P	50V	5				1 1	1.5	1.8	, M	100			C C			10/ 3	47 40	
C73ECH1H100D	1	CHIP CAP.	10P	50V	1 1	:		1									, 2				
C73ECH1H220J		CHIP CAP.	22P	50V	1		1			1			i i	-	ļ	C					
C73ECH1H330J	1	CHIP CAP.	33P	50V	1 1		1		1	!			! !	- 1			, 43				
E04W1C100M		FLECTRO	10	16V	1			l		1						 <u>c</u>	, 12				
K45B1H471K		CERAMIC	470P	50V	. 2					1						C	. 16.				
		CERAMIC	1000P	50V	14	4.1											, 4,			0, 17,	
K4581H102K	1	CCRAIII			1.0			100												3, 35,	
		CHIP CAP.	1000P	50V	6						1					C				1, 36,	42
K73EB1H102K	1	TRIMMER	6P		3	i	İ	1	1		1						, 1,	, 2,	3		
05-0062-05	1	TRIMMER	10P		1		Í									 TÇ	, 4				
05-0031-15	+	CERAMIC	0.35P	50V	1				·	ļ						C	, 37				
91-0498-05	1	CERAMIC	0.001	50V	1			1	1	1			t i			С	, 30		-		
91-0757-05	1	CERAMIC	0.022		1		1	1			L	L				 C	, 24				
91-1008-05	+	CERMITO	3,022																		
	į.	RF COAX. CONN	ECTOR PA	HET.DO	2				1	1	1		l i							_	
04-0154-05			1P		5		ļ	ļ	1	ļ	-					TP	, 1.	. 4,	5,	6, 7	
23-0512-05		TERMINAL CONNECTING WI			1			1		1	T					-					
31-2064-05	*	LEAD WITH CON	NECTOR		î				1		l	1	į	.							
31-3079-05	N =				1			P					1. 1			 TP	, 3				
40-0211-05		MINI CONNECTO	n er		<del>- </del>	<del> </del>	-														
		WIDE BAND TRA	METODMED		2		1	1		1						L	, 2,				
_19-0309-05	1		HSFURNER		2		1			i	1			· '		L .	, 8,	, 9			
34-2041-05	1	TUNING COIL		5T	1	·	<del> </del>	<del> </del>	-	-	7.5		1			 L	, 6				
34-0824-05	1	COIL		4T	1						12.					Ĺ	. 14				
_34-0893-05	1	COIL	3		l i	,	1				1		1			ũ	, 1				
_34-0908-05	1	COIL		. 5T	1	<del></del>		+	-	<del> </del>			<del> </del>			ī	, 12				
_34-1015-05		COIL		.5T	1 1		-	1		Ì	i		1			Ĺ	, 11				
34-1016-05	1	COIL		.57	1 1				1		1	i				ĩ	, 13				
34-1114-05	N	COIL		.51				<del></del>	<del> </del>			<del> </del>				 ī	7 7				
40-1092-14	T	INDUCTOR	1 UH		1	1			į	1				١.		Ĺ	, 10				
79-0650-05	N	HELICAL	290MHZ		1			!	1		1					Ľ	. 4.	. 5			
L79-0651-05	N	HELICAL	405MHZ				-	-	-	<b></b>	$\vdash$	<u> </u>	_			 					
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MV13	1	VARISTOR			1			1		-	i					,					
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ND487C1-3R		DIODE			1	1		1	1	1							, 1				
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25(2026	1	TR			5	<b>⊢</b> -	ļ	<u> </u>	<b>!</b>	-						Q .	7 1			· /	
25C2570A		TR			1	ĺ	1			1		[				G.	, 3				
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# TS-811A/B/E PARTS LIST

HET UNIT (X50-2010-10) (K)

HET UNIT (X	T		ļ		0.	ISTIN	CTIC	N 8	QU	ANTI	TY				l
PART.NO	NOTE	NAME & DESCRIPTION	010												REFERENCE.NO
CC45CH1HOR5C	19.2	CERAMIC 0.5P 50V	7								. T	į			C , 14, 27
CC45CH1H030C		CERAMIC 3P 50V	] 1						[			- 1		! !	C , 46
CC45CH1H050C	i	CERAMIC SP 50V			L										C , 4, 9, 65
CC45CH1H070D	-	CERAMIC 7P 50V			7	1000		1000		ž,	1. 31	. N. S.	4	10	C 38
CC45CH1H100D	1 1	CERAMIC 10P 50V						18.0		17,5		100	41		C . 44, 52
		CERAMIC 12P 50V		100	20,100			1.39/00			100				ic . 56
CC45CH1H120J		CERAMIC 15P 50V	1	1	_	-									C , 15
CC45CH1H150J		CHARITY				1			l i						C , 24, 29, 33, 60
CC45CH1H220J	1	CERAII C													C , 48
CC45CH1H330J	<del></del>	00.000	1		130.25	-				100			** A	-	C . SO
CC45SH1H560J	;	CENTILE CONTRACTOR	1				100	11/3				6.1			C , 3, 7, 12, 19, 35, 36, 40
CC45SL1H101J	-	CERAMIC 100P 50V	1 .		1367	1384					- 1				, 41, 58, 62, 63
	<u></u>	The state of the s	<del>-}</del>	:	100	<del>  </del>		-					_	-	C , 1, 2
CC73ECH1H150J	1	CUTP CAP 33P 50V			1			1	i i						C , 43
CC73ECH1H330J	1	Chill Chi .		;	l		İ	i			i		ì	i	C , 6, 11, 18
CC73ECH1H101J	1	CHIP CAP. 100P 50V							-	_			-	<del> </del>	C . 16. 21
CK45B1H471K	T	CERAMIC 470P 50V		2		ļ :		!						!	C , 23, 25, 28, 31, 39, 45, 49
CK45B1H102K		CERAMIC 1000P 50V	. 1 - 3	3	1.				1.1				i	1	, 53, 66
	1					1 22		-				٠			C , 26, 54
CK45B1H222K	-	CERAMIC 2200P 50V			ł	!	1	1					1		C , S, 8, 10, 13, 17, 20, 30
CK73EB1H102K	İ	CHIP CAP. 1000P 50V	1	5	Į		l	!	1	1			1		
				<u> </u>	<u> </u>	<u> </u>	!						:		, 32, 34, 37, 42, 47, 57, 59
					13.11	1 - 1						i	İ	Į.	, 61, 64
CO5-0030-15		TRIMMER 20P				134	l.		1						<u>C</u> , 3
005-0031-15	İ	TRIMMER 10P			1 - 1	Page 2	1	ł							TC , 2
		TRIMMER 6P		Į I						T		i	i	1	TC , 1
005-0062-05		CERAMIC 0.35P 50V				į		1	1	Ì				1	C , 55
091-0498-05		CERAMIC 0.022 SOV	1			i .	i	1	ł	i		!	!	ļ	C , 67
091-0085-05	+	CERTIFICA		1 1000	7 - 1 -	<del> </del>	- 1.	-					100	1	C , 51
C91-0757-05	1.			i i	9	1	1.0				1		1	1	C , 22
C91-1008-05	1	CERAMIC 0.022 50V	1	•		ļ	1.5			į	1		i	į	
		RE COAX. CONNECTOR RACHET, DO		2	1	1			1		1		1	1	
E04-0154-05	i i	RF COAX. COMMECTOR REPORTED	1	-	l				i	İ			1		
L19-0309-05	İ	WIDE BAND TRANSFORMER		2!		i	1		i	_	l		1		L , 2, 3
L33-0026-05		CHOKE COIL		1	_	1		_	1		_			1	L , 17
L34-2041-05		TUNING COIL		4		1			i		1		į.	1	L , 8, 9, 18, 19
134-0824-05	-	COIL 3.5 2.5T	ļ	1	1	1	1	ļ	!		ł		į	i .	L , 6
		COIL 3 41	1	1		1		!	-				i		L , 13
L34-0893-05	i	COIL 3 9.5T		1	1	1	i				į.		1	1	L , 1
L34-0908-05				1	1	1	i	1	1	ļ	1	i	i	!	L , 12
L34-1114-05		0012		3	+	<del> </del>		-	1	100	1	,	7	1	L , 7, 23, 24
L40-1092-14	1	11000101		2		1:	100	1	1.		1 1		1	1	14, 22
L40-1011-14	1			1	10%	1		P 0.	1	100	1		1	1	1 , 16
L40-1092-16		INDUCTOR 1 UH		1	+-	+	<u> </u>			<del></del>	7		<del></del>	<del> </del>	L , 15
L77-1270-05	N	XTAL 42.38857MH2		4	1	i		1	1	i	1		1	1	10, 11, 20, 21
L79-0650-05	1	HELICAL 290MHZ				1		1	1		1	i	1		1 , 4, 5
L79-0657-05	N_	HELICAL 400-420MHZ	+	2	1	+			1	+		-	-	+	+ <del></del>
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MV13	1	VARISTOR		• 1	1	₩7.	1.	1	11.	100		1	1		
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ND487C1-3R		DIODE	i	+  ·	1		1	į		1	i		1	1	1.
		THERMICTER	- 1	1	1		1	5	1	:	!		1		TH , 1
112-102-2		THERMISTER	100	-	198	+	1	7	1		1	1	1.		
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25A933S(Q)	N	TR S S S S S S S S S S S S S S S S S S S		6	Territ	1.19	1200		n.es		100	P .	134	42000	Q , 2, 3, 5, 6, 7, 15, 16
25C2026	-			3	+	+	1	1	1	1	_	1	1		Q , 4, 13, 14
2\$C2787(L)		TR		1	1			1	1		1	i		1	Q , 1
2SC2570A		TR		2		1			1	1	1			1	Q , 8, 9
2SC1740S(Q)	i N	TR	_1_	۷.		<u> </u>		<u> </u>		1				<del></del>	

TONE UNIT (X52-1290-60) (T,W)

					D	ISTI	VCTI	ON S	Q	UANT	ITY								
PART.NO	NOTE		060							1					REFERENCE.NO				
K4581H102K		CERAMIC 1000P SOV	1			_		i -		į		i			c ·				
Q92M1H472K	i	MYLAR 4700P 50V	1			į		į		1	1	1			c				
CQ92M1H103K	-	MYLAR 0.01 50V	1	ļ	L	ļ		ļ				<del> </del>							
Q92M1H333K	1	MYLAR 0.033 50V	1 1 1		11.50			1.25		201	Light.			17.	C C				
C90-0847-05	-	ELECTRO 47 10V	1	8	100		100	1600		1.	100	1 1	100		C				
091-0433-05	1	CAPACITOR 0.01	1							!		1			[C				
91-0117-05	+	CERAMIC 0.01 50V	1	1					1		1				C				
071-0117-03				1		1		1		1	1	1			1				
540-0417-05	1		1	1		ļ .		i	ļ	1	1								
=40-0417-03			-	100	95.00		77.1			15.15	1		1						
NE555P	i .	IC	1		3804	100	1000	11	16.	975.		1.0	1.75		IC . 1				
NEDDDE	!	10	A.	13.00	100	10000	45.5	11		100	1 _ 22								
RD14882C472J	<del></del>	RES. CARBON 4.7KOHM 1/6W	1									T			R				
	1	RES. CARBON 12K OHM 1/6W	1	ŀ		İ		ļ		i			ì		R				
R014BB2C123J		RES. CARBON 33K OHM 1/6W	1	1		l			l	!	1		Ī		R				
R014BB2C333J		RES. CARBON 47K OHM 1/6W	1							1	1				R				
RD14882C473J		METAL FILM 91K 1/8W	1	Į.	1	1.			ĺ	!		1			R				
RN14BK2B9102F		TRIM.POT. 20K	1			1	l,			1 .	į.	l	L.		VR , 1				
12-3521-05		1819.00 . 208.		$\vdash$	<del> </del>	_			<del>                                     </del>	1	1		<u> </u>						
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# PARTS LIST TS-811A/B/E

CONTROL UNIT (X53-1410-XX) (-12 : K -22 : M,X -52 : T -62 : W)

OIT HOL OI		(X53-1410-X										ANTI	TY						CE.NO			
		NAME &	DESCRIPT	TION	012	021	022	051	052	061	062				+	+		52,				
	NOTE		15P	50V	2		2		2	Ī	2	i	_ i		1				22			
C45CH1H150J		CERAMIC	27P	50V	1 1	İ	1	- 1	1		1	- 1	1	- 1	- 1			73				
C45CH1H27OJ		CERAMIC	27P	50V	1	1	1		1		1							72				
C45CH1H27OJ		CERAMIC	33P	50V	1		- 1	100	1		1	31.3						54	#4. 5%		. i e e e e e e e e e e e e e e e e e e	etatat VII.
C45CH1H330J		CERAMIC		50V	1	1.38	. 1		1	3 4	1				1		Ç.	. 44				
C45SL1H121J		CERAMIC	120P		2	90.J	2	9000	2		2			900		7.2		65,	69	2.5		
E04W1C221M		ELECTRO	220	16V		-	1		1		1	_					Ç.	66				
E04W1A471M		ELECTRO	470	10V	1		i	i 1	1	.	- 1	į	li	i	1	- 1	С	. 19				
E04W1HR47M		ELECTRO	0.47	50V	1	1	2	1 1	2		2		1	i	- 1	l	C	. 47,	79			
F92V1H104J		POLYESTER	0.1	50V	2	-			1		1			200		197.1	С	. 37	100			3 140
K45B1H182K		CERAMIC	1800P	50V	1	130	1	100		350	1		3.60	8 6 6	100			. 21	医动作		100	
Q92M1H182K		MYLAR	1800P	50V	1	14.8.	-1	100	1.			13.	[P.62]		1			. 43			F 250	1 - 11 - 1
	1	MYLAR	1000P	50V	1	1.00	1		1	4000			1000	130 1				. 46				
Q92M1H102K		MYLAR	6800P	50V	1	1	1	]	1	1	1			l i		- 1		, 22				
Q92M1H682K	ì	TANTALUM	10	10V	1	i	1		1		1							, 45				
S15E1A100M	1	ELECTRO	1	50V	1 1	1	1		1		1		L				<u></u>	, 48.	E O			···
90-0838-05			33	10V	2	1	1		2	1	2		100			11	C	. 40	. 50		F	
90-0846-05		ELECTRO	. 47	100	1	1	1 1		1	13-11	1	1.1			10.5	6 1	C.	, 42	100 4	1.30		
90-0847-05	1	ELECTRO	0.1	50V	1	1 1	1	1.1	1		1			L		4		, 41		<del></del>	10 11	, 70, 7
90-0837-05	1	ELECTRO		50V	1 8	1	8	t'	8	1	8		T					, 7.	. 8,	16, 3	0, 31	, /0, /
91-0457-05		CERAMIC	0.022	3 U V	1 5	1	ı	i			1	l	1	i				. 84				
•	1	i		C 0 11	2	1	2	i	2		2	ł	1				c	, 26	64			
91-0457-05	1	CERAMIC	0.022	500			- 4		4	1	4	<del> </del>	1							10,	36	
91-0753-05		CERAMIC	470P	50V			1		1	1.75.	1		12.5		1000	1.50	C	, 86	44.00			
91-0117-05	ł	CERAMIC	0.01	50V	1 1	100			21	186	21	34.	100	0,70			c	, 2	. 3,	4.	5, 6	. 11. 1
91-0757-05		CERAMIC	0.001	50V	21	,	21	20.00	21	-	21	-	+	12.1	-	-	-	. 13	14,	29,	32, 35	, 38, 3
.91-0/3/1-03	<del>                                     </del>				1		i	1	1		1	!	1			i					80, 81	
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-04 0357 05	ļ	CERAMIC	0.001	50V				1			-	<b></b>		ļ.,,,,	<del> </del>			, 56				
C91-0757-05	+	CERAMIC	470P	50V	1		1		100	1		1	1	12.3	-	1	c	, ,,,	. 28.	77,	78	
C91-0753-05	1		0.001	50V	4		4		4		4	1.5		Line	1 : "	1.1		1 41	,	20	22 26	, 33,
C91-0757-05	1 .	CERAMIC	0.01	50V	1	1 12	100	12	100	12	100	100					<u>C</u>	. 13	1 10/	- 203	24 05	, 33, .
C91-0769-05		CERAMIC	0.01			-	T	1	1	1		1		1				, 51	, 55,	0//	76, 85	
	1		0.01	sov	و ا	:	5		5	i	5	1	1	1	1		C	, 17	, 25,	63,	74, 75	
C91-0769-05	1	CERAMIC	0.01	307	-		1 -	ĺ		1		į.										
	<u></u>	1			1	<del>. i</del>	6	<del></del>	6	-	6	1		1	1 .	Ĭ -	D	/ 1	<i>r</i> . 3,	4,	5, 6	1
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DTA114YS	N	DIGITAL TR						11	1 2		2		-		1		Q	, 11	, 12			
DTC143TS		DIGITAL TR			1 4	2	-	1			1 -	1		1	1							
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E02-0122-05	N	IC SOCKET	24PIN			1	1 1		1 1	-		+	+	-	1		·					
E23-0512-05	+	TERMINAL	1P			2		7	2		2	1	1.1	1		1.0	Sec. 165	0.00	atali ji			
E23-0312-03		1.2			4 3		100	1	100	可分性		1 1/2				1000	945		16			
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J32-0761-04		3100 8 5033 1	J. 2011				Τ					1	i	İ	1	ł	1					
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L77~1206-05	N	XTAL	4MHZ	-, <u>-</u>		1	1 :	١l	1		1					<del> </del>	X	, 1				
L78-0009-05	N	CERAMIC OSC	4mn2		-	-		1 2 2			3111				1	1.75	100			1000		
	1	1	CDIT	X2 (RAM)		1		rl	1		1	4872		130	128	100		, 14				
MB8418-20LP-GR	A N	IC	991	VE CUVILLY		1	1				1		Л.	1	100			, 11				
MC14584BCP	1	IC				2 -		2	1		1 2			-				, 1				
MC14069UBCP		IC				1		1		il	1 3		1	i	1	!	IC	, 19	l			
MN6 127A	1	IC						1	;		1 1		1	1	1	1	D	, 17	,			
MTZ 12JB		ZENER DIODE	12V_			1								+	+	1		, 11			7.1	
MTZ 9.11B	-	ZENER DIODE	9.1V			1	1 900	1		100	1 1	1		100		130	LIC	. 16	200			3.35%
M5L8255AP-5	l N	IC					400	100	10				10.3	d st	420.	100	1	,				5 30
M348633WF-3	"		gran Prof.		21 32	200	1	1000			-	13398	400	1-	+	4	+	· -				
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N30-3006-46	1	PAN HO SCREW			1	1	1	1	i		1		1	1	1		1					
N30-3010-46	1		,			2	1 .	2	1 :	2	1.3	2	Щ.	1	ــــــــــــــــــــــــــــــــــــــ	1	1					
N87-2606-46		TAPPING SCREW												_								

			DISTINCTION & QUANTITY   012  021   022   051   052   061   062													REFERENCE.NO				
PART.NO N	OTE	NAME & DESCRIPTION				051		061								, 10	106.111			
ST 518A	N	IC C	1	1	1		1		1	1			1	İ						
SIDION			١.				1	1			. 1			ļ	٧R	, 1				
12-4416-05	N	TRIM.POT 50K	1		1		2		2							3.	15			
90-0515-05	- 1.	RESISTOR BLOCK 10K	2		2	100	1		1		1 a. 1			3 (4)	R;	, 89				
90-0521-05		RESISTOR BLOCK 47K X7	1	180%	1	5 5	1	· .]	1		" .					, 83				
90-0532-05		RESISTOR BLOCK 27K X5		-			1		1	_	-	_			R	, 38				
90-0534-05		RESISTOR BLOCK 10K X5	1		1		1		î	ļ			1	1	R	, 70				
90-0578-05	N	RESISTOR BLOCK 5.1K X10	1	<u> </u>	1		1		1						IC	, 23	<del></del> -			
N74LSO5N		IC	1		1		1		1				1		I C	, 23				
N74LS32N		IC IC	1 1		1		1	100	1		15. 4		3.7			. 15				
N74LS138N		IC	-		3		3		3		-			i	IC	/ 12	, 17,	2.2		
N 74LS174N		16	1 3	' i	i 3	1	د		٠		1 1		1	ļ						
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C 4011BP		IC OR BU4011BP	7	-	<del>                                     </del>		<del> </del>								IC	, 1	, 2			
C 4069UBP		IC	١.	i	1		1		1	1	i				IC	, 16				
MP8255AP-5	N	lic .	1	1	1		1		. ·	Ī	١.									
THE DESIGNATE - 2				1-	ļ	-			1	<del> </del>	+				IC	, 18				
UPC4558C	-	IC		1	1		1		1		!					, 21				
UP C7805H		lic			1		1		1	1	i		ļ l							
UP 07802G-088-36		MICRO-PROCESSOR		1	1	ļ	1 1	-		-		-			IC	, 16				
JP D8255AC-5	N	10	1		1							1				, 20				
UPD7507G-575-00		MICRO-PROCESSOR FOR DCS	1 :	1	1	1.5	1		1		J .									
15019-213-00					1	1	1.0	-	19	├	+ -	├			0	, 2	, 8,	9, 1	0, 13,	14,
10.0127		DIODE	19	7	19		19	İ	19	1	1	!	1		"	. 18	19.	20, 2	1, 22,	23,
15 5133		10000		1	1			l			1	-	1		1			27, 2		
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		DIQUE		2	4	1	i ·	l		j	1		1		0	. 12	, 30,	35		
188133		DIODE		Tall 1	3	1	1		i . '	1 .	100	32	1		0			33, 3	4. 35	
18 8133		DIODE DIODE	1_		1337		5		1	1	<b>↓</b>			<u> </u>	0	14	. 30	31.3	2, 33,	34,
15 5133		DIODE			ì				7	1	ļ			l	i	, 10	, 50,	31,	, 55,	347
18 8133		) TOOC	1		1		1		1		1		į	ĺ	1					
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25 A1307(Y)	N_	TR	1	2	2		2		2				1	1	Q		, 20			
25 A1015 (Y) .		TR TR		1	1 1		1		1		1	١.	1		Q	, 21				
25 A1048 (Y)						1.	1	<u>L</u> .	L_		1	_	<u> </u>		Q	, 21		40		
2S A1115(E)		TR		3	3		3		3		1		1		Q		. 17.	19		
25 A1015 (Y)		TR		1	1		1	ļ	1	1			1	i	Q	, 13			•	
2S C:959 (Y)		TR		4	1 4		4		4		1		1		Q			9, 1	.0	
25 C2458 (Y)		TR		1	1		1 1	115	1	1	1			4	Q	, 15				
25 (2703 (O,Y)		TR	1.				1	E 15	ΗÑ	100	P .	100	1	1	100					
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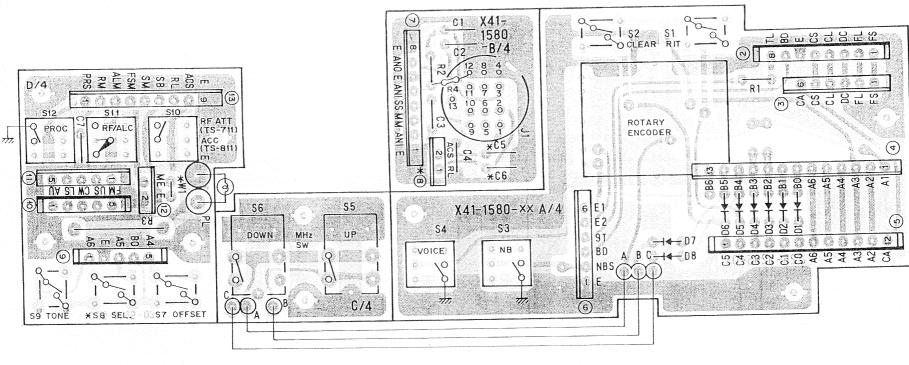
# TS-811A/B/E PARTS LIST

DISPLAY UNIT (X54-1820-11)

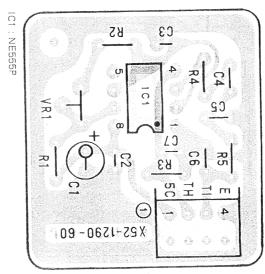
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PART.NO	NOTE	NAME & DESCRIPTION	011							-	-+		C , 20	
C45SL1H101J		CERAMIC 100P 50V	1	- 1	- 1	i		i	1	1	- 1	1	C , 12, 13	
E04W1V100M		ELECTRO 10 35V	2	í	1	- 1	- 1					j	10, 14	
E04W1C100M		ELECTRO 10 16V	2 '	1		1								
E04W1C330M		ELECTRO 33 16V	1 1		1		11			į.	- 1	1	C , 8	
E04W1A470M		ELECTRO 47 10V	1	- 1			100		-32.		1		C , 5	
K4581H102K		CERAMIC 1000P 50V	8	- 1	- [		- 1	1					C , 1, 2, 3, 1	5, 16, 17, 18
.K4581H1UZK		CERMITO										:	. , 19	
		MYLAR 0.01 50V	:		- 1	- 1	- 1			- 1		1	C , 11	
1092M1H103K		DI GAN	1 1	i		- 1	1	- 1	1			1	C , 4	
Q92M1H223K			1				- 1						C , 6	
91-0769-05			2		. !		- 1	- 1	- 1	- 1	1	- 1	C , 7, 9	
91-1008-05		CERAMIC 0.022 50V	٠			- 1	- 1	- 1		ļ	í	1		
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TA124EF	N	DIGITAL TR	۱ ۲	i		!	. !		i	- 1	į.			
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06-0858-05		8P METAL SOCKET	1 1											
11-0401-05		EARPHONE JACK EXT.SP	1			. 1	- 1	- 1	- 1		i	- 1		
11-0407-05		EARPHONE JACK	1		j	- 1	. 1	- 1		1		- 1	1	
11-0413-05		PHONE JACK PHONES	. 1					1						
11-0422-05	N	KEY JACK KEY	1				T	İ	- 1					
31-3052-15		TAPE CABLE 10X25MM	1	1 1				- 1			- :			
31-3053-15	N	TAPE CABLE 12X25MM	1	!				1				1		
31-3053-15	N	TAPE CABLE 4X50MM	1	-		1 1		- 1			-	1		
		TAPE CABLE 11X50MM	1						. 1	- 1	1	1		
31-3055-05	N		1					- 1		.	İ	1		
31-3056-05	N	TAPE CABLE 12X50MM	<del></del>	<del> </del>		_	-							
IP11FM7		DISPLY TUBE	1						į	. !	i	i	V , 1	
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19-0323-05		TRANSFORMER	1					i		1	1	- 1	L , 2	
_30-0504-05	i	IFT	1 1			! !	l i	i			- 1	1	·  L , 3	
_40-1511-14		INDUCTOR: 150 UH	- 1 i		ļ		<del></del>						L / :	
40-1011-04	1	INDUCTOR 100 UH				i						1	!-	
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MC931	1	DIODE	2				<del>, ,</del>						D , 2	
MTZ6.2JA	1	30010	1			;	!	i		i	i i	1	0 . 5	
MTZ7.5JA	1	DIODE	1	į.		1		1	1	- 1			0	
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R12-2413-05	1	TRIM.FOT.(5K)	1	t		1	1 1						VR , 3	
R12-3446-05	1	TRIM.POT.(30K)	1 1		•	1	1			-		1	VR 7	
R12-5420-05	1	TRIM.POT. 100KOHM	1				<b> </b>		<del>  -</del>	-+-		<del></del> -	VR / 8	
R12-7403-05		TRIM.POT. 500KOHM	1		Ì	i	i			1		1	VR , 4	
R19-3420-05	Ι'	POTENTIOMETER	1			l	1 1			- 1		i	VR 2	
R19-9409-05	N	POTENTIOMETER	1			L	11							
R24-9404-05	N	POTENTIOMETER	1			1	i			1	- 1	į		
R90-0520-05	1	RESISTOR BLOCK 47K DHM X5	1		1	1	ļ į		ı İ	1			R , 25	
R90-0522-05	1	RESISTOR BLOCK 47K OHM X6	1	1	1	1	1 1		ll				R , Z4	
R90-0579-05	N .	RESISTOR BLOCK 47K OHM X11	1		ľ				I T				R . 23	
490-03/9-03	100	KL3151DW SECTION		1	1 .	1	1 1				. 1	1	1 '	
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C5066BP	<u>.                                    </u>	IC		+	<del>                                     </del>	<del> </del>	-							
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112-351-2	1	THERMISTOR	1	1	1	<u> </u>	لححل						i   ''' '	
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2SC1959(Y)		TR	2		1	i	1		1 !	1	1	1		
25C2458(Y)	1	TR	1	. 1	!	i	1		1 1		- 1	1 .	Q , 4	

# PC BOARD VIEWS TS-711/81

SWITCH UNIT (X41-1580-XX) Component side view (-01: TS-811 K,M,X -11: TS-711 K,M1,M2,X -61: TS-711 T,W -62: TS-811 T,W)



TONE UNIT (X52-1290-60) Component side view (TS-711 T,W TS-811 T,W)



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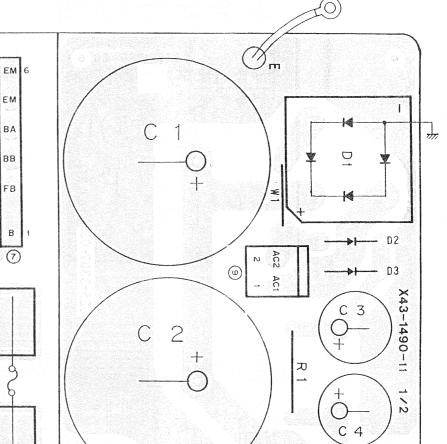
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Q1,5: 2SA1012(Y) Q2,9,11: 2SC1959(Y) Q3,4,6: 2SC2458(Y) Q7: 2SA1048(Y) Q8: \( \mu PC78M08H \) Q10: NJM4558S Q12: DTC114ES D1:S10VB20 D2,3:V06B D4:U05B D5:MTZ8.2J(B,C) D6:MTZ6.2J(A,B) D7:VD1223 D8,9:1SS133

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X43-1490-11

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R10

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C18

8R 8R 8R 8R

R16 R17

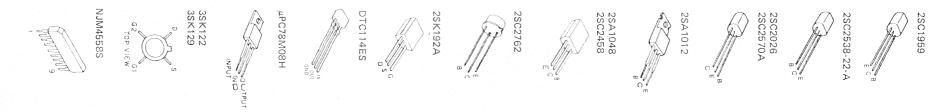
E 8C 8C 8C 8C 8C-8C

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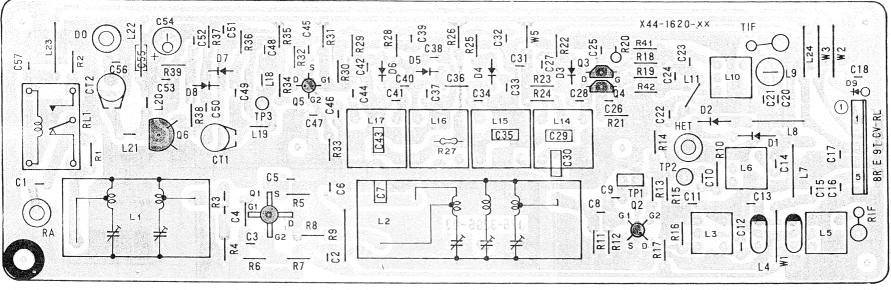
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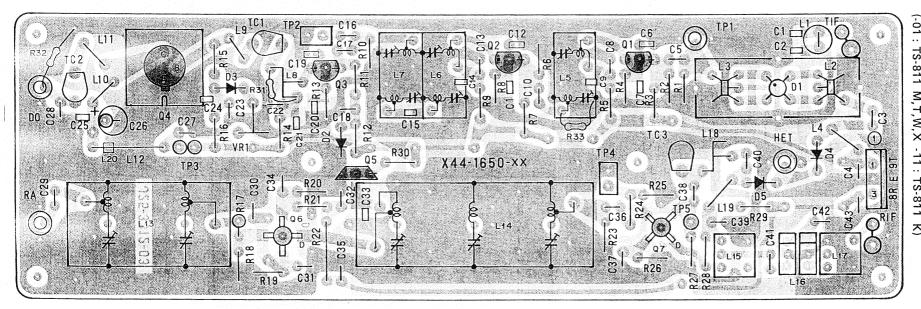


RF UNIT (X44-1650-XX) Component side view

Component side view S-711 K,M1,M2,X)



Q1: 3SK129(Q,R) Q2,5: 3SK122(L) Q3,4: 2SK192A(GR)\*N Q6: 2SC2538-22-A D1,2: MA856 D3-7: 1SV123 D8,9: 1SS133



Q1,2:2SC2026 Q3:2SC2570A Q4:2SC2762 Q5:2SC2458(Y) Q6,7:3SK129(S,T) D1:ND487C1-3R D2:MV13 D3:1SS133 D4:MA856 D5:MA856 (M,T,W,X),1SS97 (K)

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W4 /W5 1W6

X45-1380-11

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18 15 ဗ္ဗ C14 VR1 VR2 185 **‡** □ W9

L5

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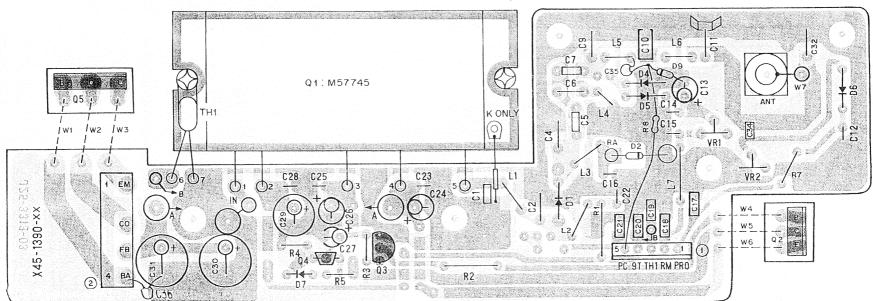
Q1: M57727 Q2: 2SA1012(Y) Q3: 2SC1815(Y) Q4: 2SA1048(Y) Q5: 2SD717(O,Y)

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Q1: M57727

C24

D1: MI407 D2: MI308 D3: 1SS101 D4-7: 1S1587 TH1: SDT1000F

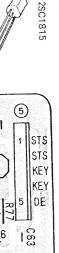


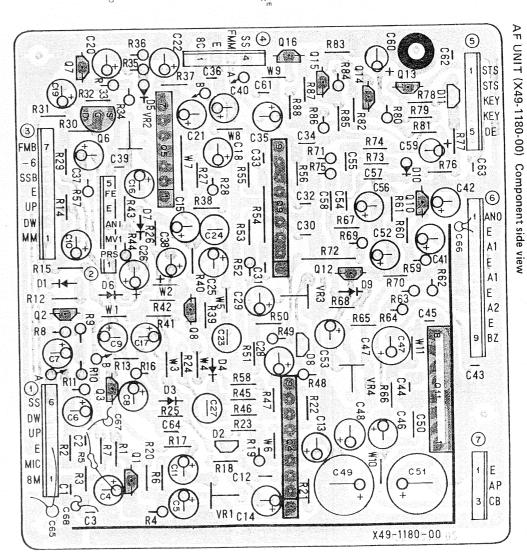
C22 —C23

Q1: M57745 Q2: 2SA1012(Y) Q3: 2SA1018(Y) Q4: 2SA1048(Y) Q5: 2SD717(O,Y)

D1: MI407 D2: MI308 D4-7,9: 1SS101 TH1: SDT1000F

FINAL UNIT (X45-1390-XX) Component side view (-01: TS-811 M, X -11: TS-811 K -61: TS-811 T -61: TS-811 T,W)





2SA1012

ENCODER ASS'Y (W02-0364-00) Component side view VR2 R10 EN3 EN2 ENT PSP 50 Вđ 18 D3 DS 10

Q1-3: PN126S(R) Q4: 2SC2458(Y)

IC1: LM358P

0)

D1-3: LN66(R) D4: V06B

2SC2459(GR) Q2,13: 2SA1048(Y) Q3,7,8,10,12,14-16: 2SC2458(Y) Q5: µPC1158H2 Q6: 2SK30A(GR) Q11: MB3713 4.6.7.9.10: 1SS133 D2.8: MC911 D5: 1N60 D11: MC921

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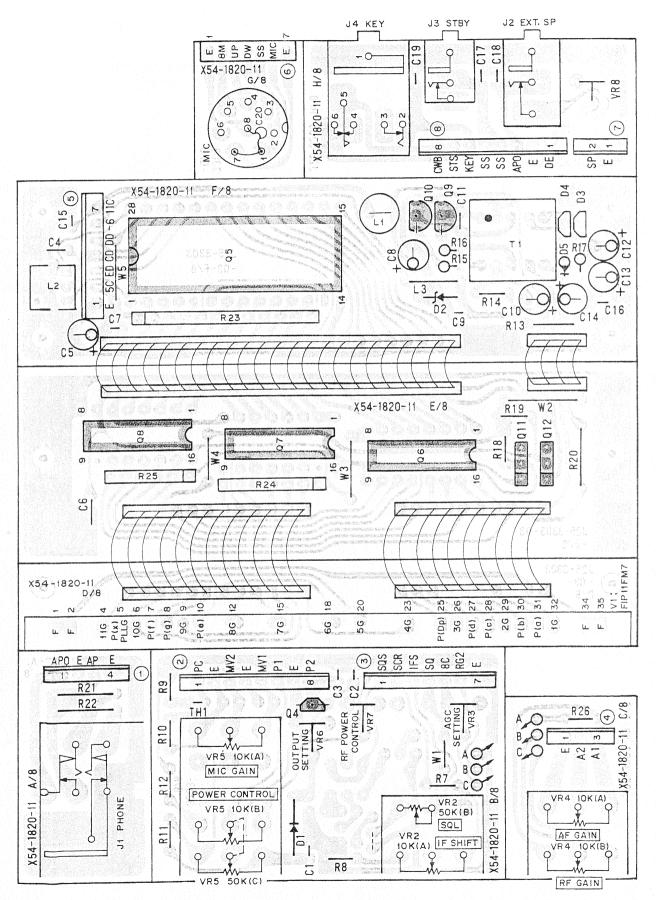
MB3713

<sub>1</sub>PC1158H2

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# TS-711/811 PC BOARD VIEW

DISPLAY UNIT (X54-1820-11) Component side view



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Q4:2SC2458(Y) Q5: \(\bullet \text{PD763C}\) Q6: \(\bullet \text{PA80C}\) Q7,8: \(\text{TC5066BP}\) Q9,10: \(2SC1959(Y)\) Q11,12: \(\text{DTA124(F)}\) D1: \(1N60\) D2: \(MTZ6.2JA\) D3,4: \(MC931\) D5: \(MTZ7.5JA\) TH1: \(112.351.2\)

Facility (Facility)

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(A/4)			
\$1,2	(S50-1412-05)	Tact switch	RIT,CLEAR
S3	(S40-2440-15)	Push switch	NB
S4	(S40-2441-15)	Push switch	VOICE
_	(W02-0365-05)	Rotary encoder	RIT
(C/4)			
S5.6	(S50-2402-05)	Tact switch	MHz (UP, DOWN)

55,6 (D/4)	(550-2402-05)	1 act switch	MINZ (OF, DOWN)
S7,9	(S50-1412-05)	Tact switch	OFFSET, TONE
S8	(S50-1412-05)	Tact switch	SELECTOR K,M,X
S10	(S40-2440-15)	Push switch	RF ATT (TS-711), ACC (TS-811)
S11,12	(S40-2440-15)	Push switch	RF/ALC,PROC.

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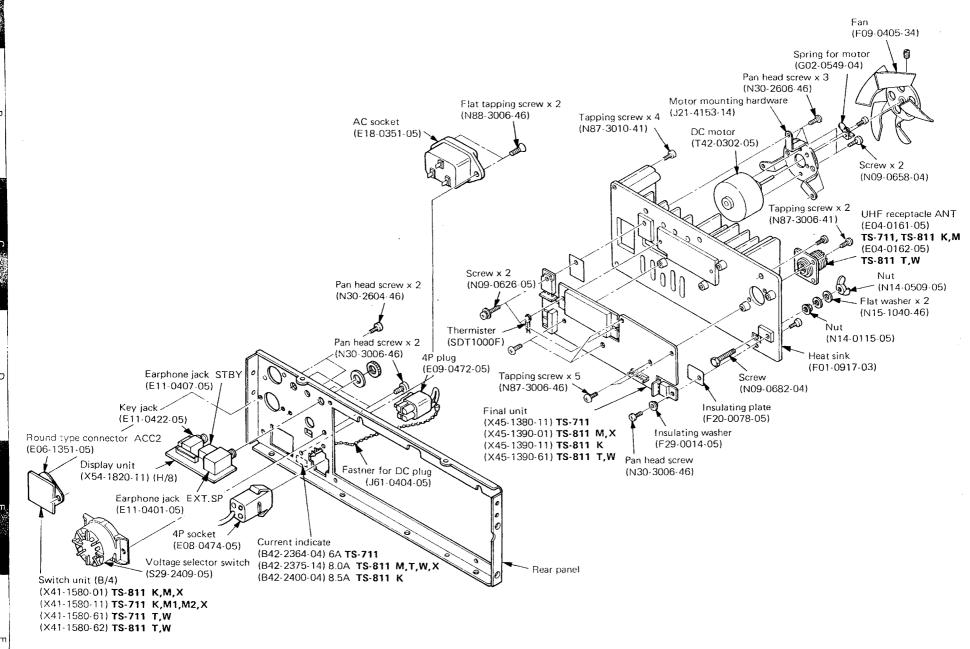
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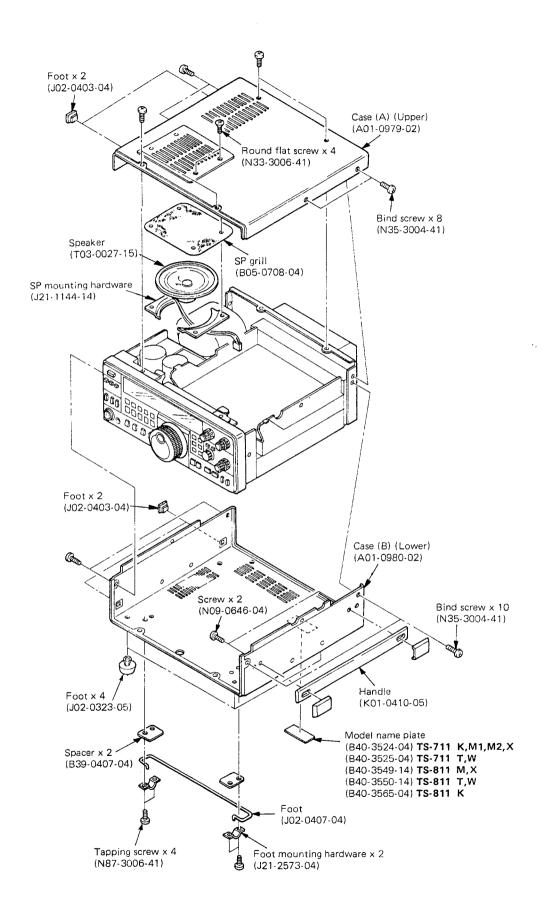
DISILA	(1 OIVII (NO-1 102	_0 117	
(A/8)			
J1	(E11-0413-05)	Phone jack	PHONES
(B/8)			
VR2	(R19-9409-05)	Potentiometer	SQL/IF SHIFT
VR5	(R24-9409-05)	Potentiometer	MIC/RF PWR
(C/8)			
VR4	(R19-3420-05)	Potentiometer	AF/RF
(D/8)			
V1	(F1P11FM7)	Display tube	_
(G/8)			
	(E06-0858-05)	8P metal socket	MIC

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Bind screw x 8



# **TS-711/811** DISASSEMBLY

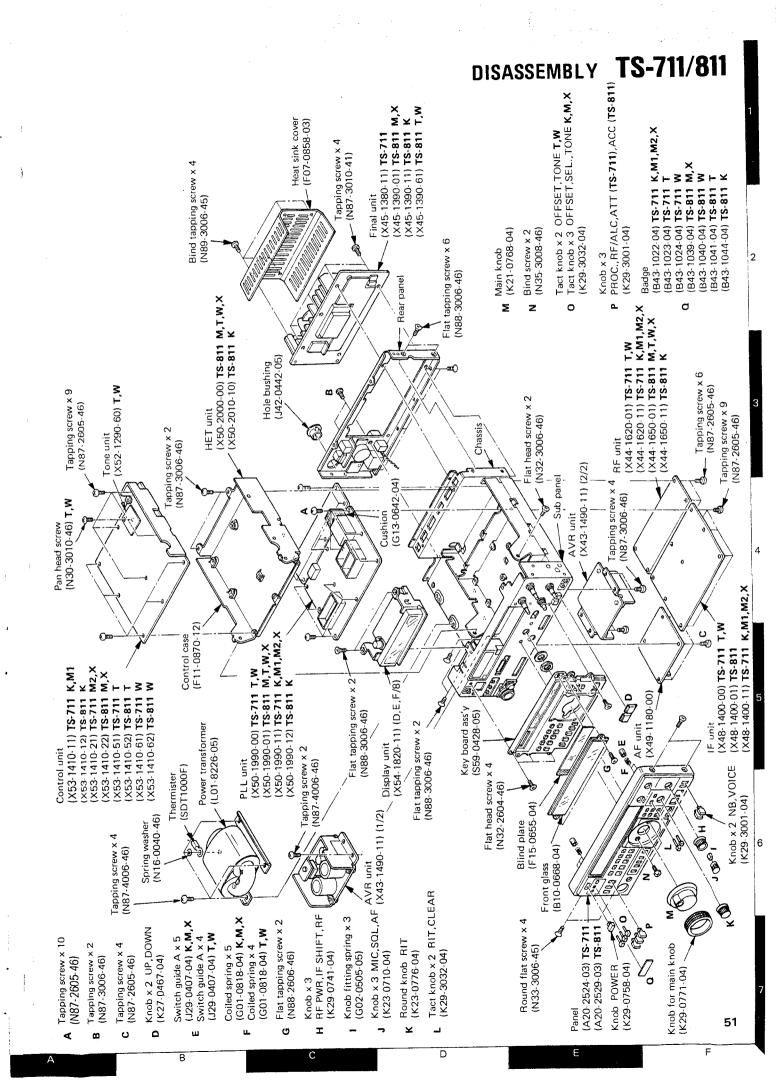


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#### **ADJUSTMENT**

#### REQUIRED TEST EQUIPMENT

#### 1. DC V.M

1) High input impedance

#### 2. RF VTVM (RF V.M)

1) Input impedance :  $1M\Omega$  min., 2pF max. 2) Voltage range : F.S =  $10mV \simeq 300V$ 

3) Frequency range: Up to 450MHz

#### 3. Frequency Counter (f. counter)

Input sensitivity: Approx. 50mV
 Frequency range: Up to 450MHz

#### 4. DC Power Supply

1) Voltage :  $10V \sim 17V$ , variable

2) Current : 6A min.

#### 5. Power Meter

1) Measurement range Approx.: 30W, 3W, 1W

2) Input impedance : 50Ω3) Frequency range : 450MHz

#### 6. AF VTVM (AF V.M)

1) Input impedance :  $1M\Omega$  min. 2) Voltage range : F.S =  $1mV \sim 30V$ 

3) Frequency range: 50Hz ~ 10kHz

#### 7. AF Generator (AG)

1) Output frquency : 100Hz ~ 10kHz

2) Output voltage: 0.5mV ~ 1V

#### 8. Linear Detector

1) Frequency range: 450MHz

#### 9. Field Strength Meter

1) Frequency range: 450MHz

#### 10. Directional Coupler

#### 11. Oscilloscope

High sensitivity oscilloscope with horizontal input terminal

#### 12. SSG

1) Frequency range: 144MHz and 430MHz bands

2) Modulation: AM and FM MOD.

3) Output level: -20dB to 100dB

#### 13. Dummy Load

1) 8Ω, 30W (approx.)

#### 14. Noise Generator

Must generate ignition-like noise containing harmonics beyond 450MHz.

#### 15. Sweep Generator

1) Sweep range: 1440MHz and 430MHz bands

#### 16. Tracking generator

#### PREPARATION

 Unless otherwise specified, knobs and switches should be set as follows **Table 11**.

POWER SW	ON	RÉ POWER	MAX
PROC. SW	OFF	SQUELCH VR	MIN
ALC/RF SW	RF	AF GAIN VR	MIN
ATT SW TS-711A/E	OFF	RÉ GAIN VR	MAX
ACC SW TS-811A/B/E	OFF	MIC GAIN VR	MIN
SELECT SW K,M,X	OFF	TONE SW	OFF
TONE SW	OFF	MODE SW	FM
IF SHIFT VR	CENTER		

Table 11

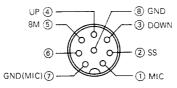


Fig. 17 MIC terminals (view from front panel side)

- Use an insulated adjusting rod to adjust trimmers and coils.
- To prevent damaging SSG, never set the stand by switch to SEND while adjusting the receiver section.
- 4) Be sure to turn the power switch OFF, before connecting the power cable to a power source.
- SSG output levels are those at the time the output terminal is open.
- Meter and display section should be set as follows Fig. 18 or 19.

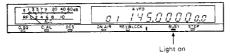


Fig. 18 Meter and display section (TS-711A/E)

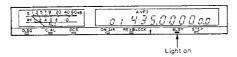


Fig. 19 Meter and display section (TS-811A/B/E)

#### TS-711 ADJUSTMENT

TS-711A/E TX/RX Section (Common)

CW : Clockwise, CCW : Counterclockwise

			suremen	1		Auju	stment	Specification/Remarks
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	
. Reset	Set the power SW on, while depressing the A=B key.  Then release the A=B key.							VFO A 144,000 MODE : CW The "Beeper" sounds
. Voltage adjustment (1)	Connect the AC power cable to the power terminal on the rear panel.							
	2) POWER SW : ON	DVM	AVR	D4	AVR	VR1	13.8V	±0.1V
AVR				9T		VR2	9.0V	±0.1V
(2) AGC voltage	1) RF GAIN : MAX	DVM	DISP (B/8)	RG2	DISP (B/8)	VR3	4.0V	±0.1V
(3) RF OUT- PUT voltage	1) RF POWER : MIN STBY : SEND	DVM	IF	W28 (Jumper	DISP (B/8)	VR7	2.0V	±0.05V
. 5 , 10 , 12 , 12	2) RF POWER : MAX STBY : SEND	Ī		wire)			3.4V	±0.2V
3. PLL	1) SF level adjustment MODE SW: FM FREQ.: 145.0000	RF V.M	PLL	SF (3-1)	PLL	L44	Adjust the core for the MAX reading, then turn it outward until a reading of 0.4V is obtained.	0.4V±0.01V
	2) 20.48MHz level adjustment MODE SW : FM FREQ. : 145.0000			TP9		L45,46	MAX	0.4–0.5∨
	3) 4F (40,96MHz) level adjustment MODE SW : FM FREQ. : 145,0000		İ	4F ( ③ -4)		L47,48	MAX	0.10-0.15V
	4) 51.2MHz level adjustment MODE SW : FM FREQ. : 145.0000			TP8	1	L39,40	MAX	0.10-0.15V
	5) B loop VCO adjustment MODE SW : FM FREQ. : 145.0000	DC V.M		TP7		L33	5.5V	±0.1V
	: 144.9999	T	_	!	j	-		2.0-3.5V
	6) 11.025MHz level adjustment MODE SW : FM FREQ. : 145.010	RF V.M		TP4		L9	MAX	0.15-0.18V
	7) 31.505MHz level adjustment MODE SW : FM FREQ. : 145.010			TP3		L57	Adjust the L5 and L7 for the MAX reading repeatedly.	0.10.15V
	8) A loop VCO adjustment MODE SW : FM FREQ. : 144.0000	DC V.M	<del>- </del>	TP6	<u> </u>	TC2	6.3V T,W 5.1V K,M1,M2,X	±0.1V
	: 145.9999 T,W : 148.0000 K,M1,M2	ı X		ì				5.2-6.0V 1.8-3.8V
4. PLL output	1) MODE SW : FM	RF V.M	PLL	TP2	PLL	L4	MAX	0.14-0.15V
	FREQ.: 145.9999 T,W : 146.0000 K,M1,M	) 2,X		TP1	-	TC1	MAX	0.45-0.58V
5. CAR	1) MODE SW : USB IF SHIFT VR : Center	RF V.M	PLL	TP5	PLL	L13	Turn the core outward until a reading of 0.3V is obtained. Confirm the peak point.	0.3 = 0.01V
	MODE SW : LSB	_!	1	İ	L	1	Confirm	0.3 ± 0.02V
	MODE SW : FM					-	· <del> </del>	10.3 ± 0.03V
	2) MODE SW : USB	$\dashv$	1		PLL	TC3	10.69650MHz	±100Hz
1	: LSB					TC4	10.69350MHz	; ±100Hz

#### TS-711 ADJUSTMENT

## TS-711 ADJUSTMENT

	1	Me	asureme	nt	Ī	Ad	justment	Specification/Remarks
ltem	Condition	Test	Unit	Terminal	Unit	Part	Method	
5. CAR	3) MODE SW : LSB	f.counter	PLL	TP5	PLL	VR1	10.69350MHz	±100Hz
J. CA.1	(SEND) . CW		1			VR2	10.69570MHz	±100Hz
	FM		1		i	VR3	10.69500MHz	±100Hz
6. IF SHIFT check	1) MODE SW : USB	f.counter	PLL	TP5			Turn the IF SHIFT all the way CW and	±1.0kHz or greater Not work on FM mode,
CHBCK .	2) MODE SW : LSB (TX)						ccw.	Does not change
7. TCXO f. adjustment (Tempera- ture conse- quence crystal oscillator)	1) MODE SW : USB	f.counter	PLL	TP8	PLL	(TC XO)	51.200000MHz	±10Hz

#### TS-711 A/E RX Section

		Mea	nt		Adj	ustment		
item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Helicał	MODE SW: FM     Connect the Sweep G, to     the ANT terminal	Sweep G. Oscillo- scope Detector	IPI	TP1 100P	PF To	L1,2	Adjust the L1 and L2 as waveform as shown on right.	(K,M1,M2,X) 144 146 148 (T,W) 144 145 146
2. 4F level adjustment (40,96MHz)	1) MODE SW : FM RX	RF V.M	IF	D1 (cathode)	iF.	L1-3	MAX (0.9V)	0.8V or greater
3. IF GAIN (1) (FM MODE)	1) MODE SW : FM VFO : 145.0000 SSG : 10dBµ SSG MOD : 1kHz	Oscillo- scope AF V.M			RF (F	L3,5,6 L24, 28,29	Adjust the each coil for MAX S-meter reading repeatedly.	Maintain the SSG output level to about the "3" S-meter reading.
	SSG DEV : 5kHz	S-meter				L33	MAX AF V.M reading.	
4. IF GAIN (2) (CW MODE)		SSG Oscillo- scope AF V.M			IF	L23	Adjust the L23 CCW to the -2dB point from MAX. AF V.M reading.	
	VR6					L13— 15, 20—22	Adjust the L13-15, L20-22, for MAX S-meter reading repeatedly.	Maintain the SSG output level to about the "3" S-meter reading.
	2) MODE SW : FM VFO : 145.0000 SSG : 10dBµ				RF	L3,5	MAX	
	3) MODE SW : CW VCO : 145,0000 SSG : -10dBµ				IF	L23	Adjust the L23 CCW to the2dB point from MAX AF V.M reading.	
5. S-meter (1) (CW, SSB)	1) MODE SW : CW SSG output : OFF				IF	VR4	Adjust to the "0" S-meter reading on RF meter scale.	

#### Measurement Adjustment Condition Specification/Remarks equipment Unit Part 5. S-meter (1) | 2) SSG : 20dB# SSG VR5 | "S-9" Adjust the SSG frequency to AF V.M the MAX S-meter reading. Oscilloscope 3) SSG : 0dB# L14 Adjust the L14 CCW Adjust the L14 to MAX, to the "S-3" if S-meter does not read the "S-3". reading. 4) SSG : 20dBu VR5 "S-9" 6. S-meter (2) 1) MODE SW : FM (FM) VFO : 145.0000 SSG İF VR9 "S-10" AF V.M SSG: 36dBµ Oscillo-SSG MOD: 1kHz scope SSG DEV : 5kHz 7. Carrier 1) MODE SW : USB RF V.M IF TP3 IF TC2 Adjust to the dip RF GAIN : MIN balance point. (After confirm RF GAIN : MAX) 8. NB 1) MODE SW : CW DC V.M TP4 L25,27 MIN 1F VFO: 145,0000 SSG: 10dBµ 9. SSG 1) MODE SW : CW SSG Adjust the VR6 SQ open : SSG 0-6dB VFO: 145.0000 Oscilloslowly and stop at SSG: 0dB# scope the threshold point SQ VR : MAX AF V.M Adjust the SSG frequency to MAX AF V.M reading. 2) SSG output : OFF Adjust the SQ VR to the threshold point. 3) SSG : -10dBµ SQ open 10. SSB/CW 1) MODE SW: LSB SSG S/N 10dB or greater VFO: 144.0000 AF V.M SSG : -10dB# K,M1,M2,X Oscilio-: -12dBµ T,W scope 11. FM S/N 1) MODE SW: FM SSG 20dB or greater SSG: -7dBµ K,M1,M2,X AF V.M : -8d8# T,W Oscillo-VFO: 144.0000 scope : 145.0000 T,W : 145.9999 : 144.0000 : 146.0000 K,M1,M2,X : 148.0000

#### TS-711 A/E TX Section

	1	Measurement				Ad	ljustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method.	Specification/Remarks
1. Setting	Disconnect the coax, cable from the TIF terminal in the IF unit.						-	
2. IF output	1) RF POWER: MAX MODE SW: CW STBY: SEND IF unit VR7: Center	RF V.M	IF	TP1	IF	L6- 11,18	Adjust the each coil for the MAX RF V.M reading repeatedly.	(0.3–0.4V)
3. CW CAR level	1) MODE SW : CW STBY : SEND	RF V.M	IF	D18	IF	L8	MAX	0.3V or less
	Connect the coax, cable to the TIF terminal after adjust.			TP1		VR7	0.38V	±0.01V

**TS-711A/E** 

# TS-711 ADJUSTMENT

			suremer	it		Adju	stment	Specification/Remarks
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	
1. Drive output	Disconnect the coax, cable from the D0 terminal in the RF unit. Then connect	0.6W Power- meter O terminal	RF	D0	RF		Adjust the each coil for the MAX output repeatedly. Connect the coax.	0.25W or greater
	MODE SW: CW STBY: SEND VFO: 145.0000 T,W : 146.0000 K,M1,M2,X		E3	1-2167-05 E04-0102-	05	- er meter	cable to the D0 ter- minal after adjust. (adjust the L15 from peak to center position of coil)	
5. Output	1) MODE SW : CW	Power-		2002	IF	VR1	Adjust to the mechanical center.	38W or greater
power	STBY : SEND VFO : 145,0000 T,W	(30W or 50W)			DISP (B/8)	VR6	26W	±1W
6. ALC meter	: 146.0000 K,M1,M2,X 1) POWER CONTROL : MAX MIC GAIN VR : MIN MODE SW : USB ALC/RF SW : ALC FREQ. : 145.000	ALC meter			IF	VR2	Adjust to the mechanical zero point.	RF meter "6"
	STBY : SEND  2) MODE SW : CW  STBY : SEND	1			RF	TC2	Adjust for the MAX ALC meter reading.	
	1				IF	VR3	RF "8"	
7. RF meter	1) MODE SW : CW FREQ. : 145.000 ALC/RF SW : RF	RF meter			Final	VR1	RF "8"	RF meter "8"
8. Protection	1) MODE SW : CW	DC V.M	IF	PRO (12-5)	Final	VR2	MIN	
	Connect the ANT terminal to GND.	DC A.M			IF	VR1	3.5A	±0.1A
9. Carrier suppression	1) MODE SW: USB, LSB MIC GAIN: MIN POWER CONTROL: MAX	RF V.M Power- meter Oscillo- scope			1F	VR8 TC3	MIN or USB and LSB.	50dB or more
10. SSB frequency response	1) MODE SW: USB, LSB MIC GAIN: Center AG output: Two-tone 2mV 400Hz, 2600Hz STBY: SEND MIC GAIN VR: 25W	Power- meter			PLL	TC3 (USB) TC4 (LSB)		Adjust to within -9dB level at the 400Hz and the 2.6kHz from the 1.5kHz Note: Confirm the carrier suppression after this adjustment.
		1	1 400H 2 2600H		<sub>5</sub> لج ل	2mV 60Ω		Adjust to the sharp cross po
	2) AG output : Single tone 2mV, 1.5kHz MIC GAIN VR : 25W						Adjust for the equi output power at 400Hz, 2600Hz as measured on watt- meter.	
	3) MODE SW : CW STBY : SEND	f.counte	r PLL	TP5	PLL	VR2	10.69570MHz	±10Hz
	4) MODE SW : FM	٦_			1	VR3		±10Hz
11. FM FREQ.	1) Front panel CH.Q : ON DISPLAY : 145.000 MODE SW : FM STBY : SEND	Power- meter f.counte	DIS ID/8	1 '	y IF TS-711A		Adjust to 145.000 MHz on f.counter.	
	1	<u>. i                                   </u>					f counter	

# TS-711 ADJUSTMENT

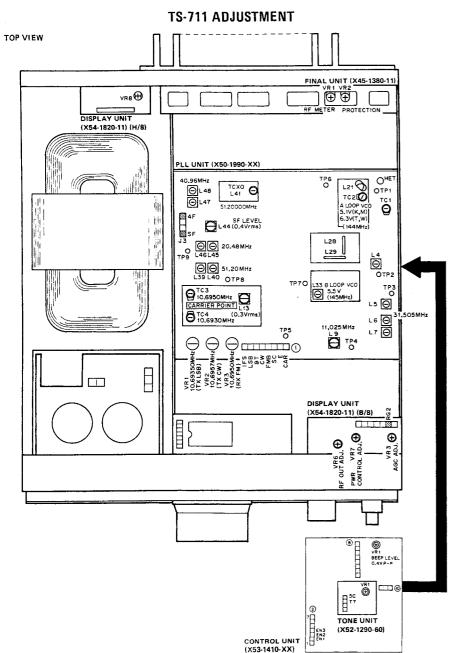
····		Mea	nt		Adj	ustment	O CONTRACTOR OF THE PARTY OF TH	
Item	Condition	Test equipment	Unit	Termina!	Unit	Part	Method	Specification/Remarks
2. Deviation	1) PROC : OFF MODE SW : FM FREQ : 145 000 STBY : SEND AG output : 1kHz, 20mV (30mV K) 2) AG output : 1kHz, 2mV (3mV K)	AG Linear detector		ANT (Directional coupler)		VR3	4.6kHz	±0.1kHz
13. Speech processor	1) PROC : ON MODE SW : FM FREQ : 145,000 STBY : SEND AG output : 1kHz, 20mV (30mV K)	AG Linear detector			AF	VR2	4.1kHz	±0.1kHz
	2) PROC : OFF	<u> </u>	-			<del> </del>	Confirm	15W or greater
14. SSB MIC sensitivity	1) MODE SW : USB MIC GAIN VR : Center AG output : 1kHz, 3mV	AG Power- meter						
15. CW sidetone	1) MODE SW : CW AF GAIN VR : Center	AF V.M Oscillo-			AF	VR4	Key down 0.63V	±0.1V Confirm sidetone output
breakin	Connect KEY to KEY jack.	scope			Rear	VR8	Turn the VR8 and check breakin. function.	Delay time: VR8 MtN : Short time MAX : longer time
16. Beep tone	1) SQL VR : Center AF GAIN VR : Center M. IN : 1 push	AF V.M Oscillo- scope			CONT		0.4V/P-P	±0.1V Confirm tone output.
17. TONE (T)	1) MODE SW : FM TONE SW : ON STBY : SEND	Linear detector f. counte	r		TONE	VR1	Shorted wire bet- ween "TH" and "SC" on TONE unit. 1750Hz	DEV : ±2.5kHz ±5kHz
18. TONE ( <b>W</b> )	1) MODE SW : FM TONE SW : push (hold)				TONE	VR1	1750Hz	DEV: ±2.5kHz ±5kHz

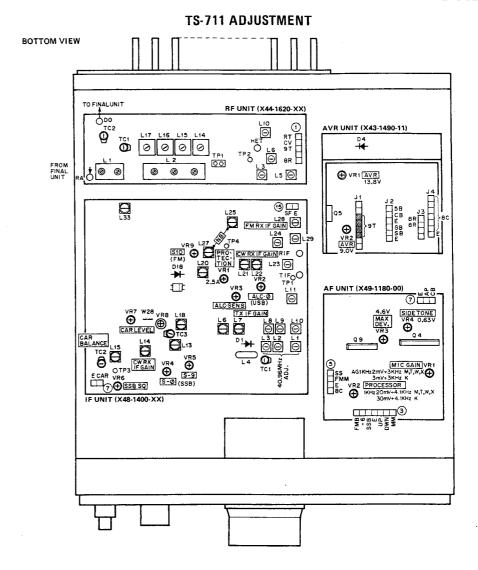
#### TS-711 A/E ENCODER Section

	Condition	Measurement			Adjustment			Samuela -/Bomoska
Item		Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Encoder	Remove the VFO knob and motor-drive the encoder at approx. 300rpm.	Oscillo- scope	CONT	EN3 ( ② -4)		Z	C III	Point C may be located anywhere. When a motor is not available, manually turn the VFO to check the duty ratio.
	2) EN1 duty ratio adjustment : Turn both CW and CCW CW : Clockwise CCW : Counter clockwise			EN1 ( ② -2)	Enco- der	VR1	D E	I After adjusting with the VFO control turned CW, check that intevals D and E are also indentical when the VFO control is turned CCW.
	3) EN2 duty ratio adjustment : Turn in the both directions.			EN2 ( ② -3)		VR2	Adjust until intervals D and E are equal to each other with point C placed at the center.	

## **TS-711A/E**

# **TS-711A/E**





# TS-811 ADJUSTMENT

TS-811A/B/E TX/RX Section (Common)

CW : Clockwise, CCW : Counterclockwise

-	ŀ		suremer	<u>'</u>		73,0	stment	Specification/Remarks
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	
Reset	1) Set the power SW on, while depressing the A=B key. Then release the A=B key.							VFO A 433,000 MODE : CW The "Beeper" sounds
	1) Connect the AC power cable							
adjustment (1)	to the power terminal on the rear panel.			ļ			40.00	±0.1V
	2) POWER SW : ON	DVM	AVR	D4 9T	.AVR		13.8V 9.0V	±0.1V
AVR (2) AGC	1) RF GAIN : MAX	DVM	DISP	RG2	DISP (B/8)	VR3	4.0V	±0.1V
voltage			(B/8)		(6/6)			
(3) RF OUT-	1) RF POWER : MIN STBY : SEND	DVM	IF	W28 (Jumper	DISP (B/8)	VR7	2.0V	±0.05V
	2) RF POWER : MAX STBY : SEND			wire)			3.4V	±0.2∨
I. PLL	1) SF level adjustment MODE SW: FM FREQ.: 435.0000	RF V.M	PLL	SF (3-1)	PLL	L44	Adjust the core for the MAX reading, then turn it outward until a reading of 0.4V is obtained.	0.4V±0.01V
	2) 20.48MHz level adjustment MODE SW : FM FREQ. : 435.0000			TP9		L45,46	MAX	0.4-0.5V
	3) 4F (40.96MHz) level adjustment MODE SW : FM FREQ. : 435.0000			4F ( ③ -4)		L47,48	MAX	0.10-0.15V
	4) 51.2MHz level adjustment MODE SW : FM FREQ. : 435.0000			TP8		L39,40	MAX	0,10-0.15V
	5) B loop VCO adjustment MODE SW : FM FREQ. : 430.0000	DC V.M		TP7		L33	5.5∨	±0.1V
	: 439.9999		4		4			2.03.5V
	6) 11.025MHz level adjustment MODE SW : FM FREQ. : 435.010	RF V.M		TP4		L9	MAX	0.15-0.18V
	7) 31.505MHz level adjustment MODE SW : FM FREQ, : 435.010	1		TP3		L5-7	Adjust the L5 and L7 for the MAX reading repeatedly.	0.1-0.15V
	8) A loop VCO adjustment MODE SW : FM FREQ. :	DC V.M		TP6		TC2	6.5V	±0.1V
	: 430.0000 : 439.9999							0.9-2.0V
4. PLL output	1) MODE SW : FM	RF V.M			PLL	L4	MAX	0.14-0.15V
	FREQ.: 435.0000		HET	TP1		TC1	MAX	0.2V or greater
5. CAR	1) MODE SW : USB (CAR leve IF SHIFT VR : Center	I) RF V.M	PLL	TP5	PLL	L13	Turn the core outward until a reading of 0.3V is obtained. Confirm the peak point.	0.3±0.01V
	MODE SW : LSB			İ	<u> </u>		Confirm	0.3±0.02V
	MODE SW : FM							0.3±0.03V
	2) MODE SW : USB		i	ì	PLL	TC3	10.69650MHz	±100Hz

# TS-811 ADJUSTMENT

			sureme	nt		Adj	ustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
. CAR	3) MODE SW : LSB	f.counter	PLL	TP5	PLL	VR1	10.69350MHz	±100Hz
l	(SEND) : CW					VR2	10.69570MHz	±100Hz
	; FM			Ì	1	VR3	10.69500MHz	±100Hz
6. IF SHIFT	1) MODE SW : USB	f.counter	PLL	TP5	,		Turn the IF \$HIFT	±1.0kHz or greater
check	(RX)					Ì	all the way CW and	Not work on FM mode.
	2) MODE SW : LSB				1		ccw.	Does not change
	(TX)				<u> </u>			
7. TCXO f. adjustment (Tempera- ture conse-	1) MODE SW : USB FREQ. : 439,000	f.counter	HET	TP7	PLL	(TC XO)	286.720000MHz	±30Hz
quence crystal oscillator)	2)MODE : USB <b>K</b> FREQ. : 441.000	Í			HET	тсз	296.720000MHz	±30Hz
8. HET K type	1) 40.96MHz level adjustment FREQ.: 439.000	RF V.M	HET	TP4	HET	L8,9	MAX. Repeat 2–3 times.	0.4V or more
	2) 286.72MHz level adjustment			TP6		TC2 L10,11	MAX. Repeat 2-3 times. Then, adjust the TC2 for the MAX again.	
	3) 42.38857MHz level adjustment FREQ. : 441.000 IF unit TC3 : Center			TP7		L18,19	MAX. Repeat 2-3 times.	0.4V or more
	4) 296.72MHz level adjustment FREQ.: 439.000			TP6		L20,21		
	: 441.000					TC2	VFO frequency change to 439,000. Adjust same level.	0.3V or more
	5) Helical adjustment Disconnect the coax, cable from the HET terminal in in the PLL unit. Connect the sweep G. (OUT:	Sweep G. Oscillo- scope Detector		тр3		L4,5	Adjust the L4 and L2 as waveform as shown on right.	400 420
	25dB) to TP2 in the HET unit, connect the detector to TP3 in the HET unit. HET unit TC1: MAX After adjustment, connect the coax, cable to the HET terminal in the PLL unit.		HET I	SND O	Z T	VEF OSO VEF OSO OSO OSO OSO OSO OSO OSO OS	ELLOSCOPE D	
9. HET M,T,W,X	1) 40.96MHz level adjustment	RF V.M	HET	TP5	HET	L8,9	MAX. Repeat 2-3 times.	0.4V or more
type	2) 286.72MHz level adjustment			TP7		TC2- 4, L10	Adjust the TC4, TC2, and TC3. Repeat 2—3 times. Also adjust the TC2,3 again.	0.3V or more
	3) Helical adjustment Disconnect the coax, cable from the HET terminal in the PLL unit. Connect the Sweep G. (OUT	Sweep G. Oscillo- scope Detector		TP3		L4,5	Adjust the L4 and L2 as waveform as shown on right.	400 410
	25dB) to TP2 in the HET unit, connect the detector to TP3 in the HET unit. HET unit TC1 : MAX After adjustment, connect			SND 0-155	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	O SN A A A A A A A A A A A A A A A A A A A	DILLOSCOPÉ R D	
	the coax, cable to the HET	1		1	1	1	1	1

# TS-811A/B/E

# TS-811 ADJUSTMENT

	Condition  1) PLL VCO OUT level adjustment FREQ.: 435.000	Me	asureme	nt		Ad	justment	Specification/Remarks
Item		Test equipment	Unit	Terminal	Unit	Part	Method	
10. HET		RF V,M	HET	TP1	PLL	TC1	MAX	0.3V or more
	2) HET OUT level adjustment Disconnect the coax. cable from the HET terminal in the HET unit. Connect the power meter to the HET terminal in the HET unit. (HET OUT terminal are connected SOM dummy.)	=0	erminal	E3	HET 81-2167 E04-01	02-05	MAX  ower meter	(0.1-0.2V)

#### TS-811A/B/E RX Section

		Mea	suremer	nt l		Adju	ustment	Gifisia-/Bamaska
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Helical	MODE SW : FM     Connect the Sweep G, to     the ANT terminal	TP4 O	RF	4	OSCILLO VER	L13,14		x,T,W
	i	GND O	15599	2	GND		. /	
2. 4F level adjustment	1) MODE SW : FM RX	RF V.M	IF PLL	D1 (cathode)	IF	L1-3	MAX (0.9V)	0.8V or greater
(40.96MHz) 3. IF GAIN (1) (FM MODE)	1) MODE SW : FM VFO : 435,0000	SSG Oscillo-	766	450	RF	L15,17 TC3	Adjust the each coil for MAX S-meter	Maintain the SSG output level to about the "3"
(1 10 10 00 0 )	SSG : 10dBµ SSG MOD : 1kHz	scope AF V.M			1F	L24, 28,29	reading repeatedly.	S-meter reading.
	SSG DEV : 5kHz	S-meter	1			L33	MAX AF V.M reading.	
4. IF GAIN (2) (CW MODE)	1) MODE SW: CW VFO: 435.0000 SSG: -10dBµ VR6:	SSG Oscillo- scope AF V.M			IF	L23	Adjust the L23 CCW to the -2dB point from MAX. AF V.M reading.	
	VR6					L13- 15, 20-22	Adjust the L13–15, L20–22, for MAX S-meter reading repeatedly.	Maintain the SSG output level to about the "3" S-meter reading.
	2) MODE SW : FM VFO : 435,0000 SSG : 10dBµ				RF	L15,17	MAX	
	3) MODE SW : CW VCO : 435.0000 SSG : -10dBµ	1			IF	L23	Adjust the L23 CCW to the -2dB point from MAX AF V.M reading.	
5. S-meter (1) (CW, SSB)	1) MODE SW : CW SSG output : OFF				IF	VR4	Adjust to the "0" S-meter reading on RF meter scale.	
	2) SSG: 20dB# Adjust the SSG frequency to the MAX S-meter reading.	SSG AF V.M Oscillo-				VR5	"S-9"	
	3) SSG : 0dBµ	scope				L14	Adjust the L14 CCW to the "S-3" reading.	Adjust the L14 to MAX, if S-meter does not read the "S-3".
}	4) SSG : 20dBµ	1	1	1	1	VR5	"S-9"	

# TS-811 ADJUSTMENT

		Mea	sureme	nt		Adju	stment	Demoise (Demoise
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
(FM)	1) MODE SW : FM VFO : 435,0000 SSG : 30dBµ SSG MOD : 1kHz SSG DEV : 5kHz	SSG AF V.M Oscillo- scope			IF	VR9	1357 9 024 6	20 40 60 8 10 ADJ
. Carrier balance	1) MODE SW: USB RF GAIN: MIN (After confirm RF GAIN: MAX)	RF V.M	IF	ТРЗ	IF	TC2	Adjust to the dip point.	
3. NB	1) MODE SW : CW VFO : 435.0000 SSG : 10dB#	DC V.M	IF.	TP4	IF	L25,27	MIN	
9. SSG squelch	1) MODE SW: CW VFO: 435.0000 SSG: 0dB SQ VR: MAX Adjust the SSG frequency to MAX AF V.M reading.	SSG Oscilio- scope AF V.M			IF	VR6	Adjust the VR6 slowly and stop at the threshold point.	SQ open : SSG 0-6dB
	2) SSG output : OFF				†		Adjust the SQ VR to the threshold point.	
	3) SSG : -12dB#		1		1			SQ open
10. SSB/CW S/N	1) MODE SW: LSB VFO: 430.0000 SSG: -10dBµ K,M,X : -12dBµ T,W	SSG AF V.M Oscillo- scope						S/N 10dB or greater
11. FM S/N	1) MODE SW: FM  SSG: -7dB\mu K.M,X :=8dB\mu T.W  VFO: 430.0000 : 435.0000 1: 439.0000 : 430.0000 : 430.0000 : 449.9999 K.M,X	SSG AF V.M Oscillo- scope						20dB or greater

TC C	44	Λ	ID ID	TV	Section

		Mea	sureme	nt		Adj	ustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Setting	Disconnect the coax, cable from the TIF terminal in the IF unit.							430 450 K
2, Helical	1) Connect the sweep G. (OUT : 20dB) to TP1.  RF unit TC1 : MAX   Disconnect the coax. cable from the HET terminal.	Sweep G. Oscillo- scope Detector	RF	TP2	L57	Adversaria	NG	430 440 M,T,W,X
3. IF output	1) RF POWER : MAX MODE SW : CW STBY : SEND IF unit VR7 : Center	RF V.M	1F	TP1	IF	L6- 11,18	Adjust the each coil for the MAX RF V.M reading repeatedly.	(0.30.4V)
4. CW CAR	1) MODE SW : CW STBY : SEND	RF V.M	IF	D18	1F	L8	MAX	0.3V or less
; 	Connect the coax, cable to the TIF terminal after adjust.			TP1		VR7	0.38V	±0.01V

# TS-811 ADJUSTMENT

		Mea	suremen	τ.		Adju	stment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
i. Drive output	1) Disconnect the coax. cable from the D0 terminal in the RF unit. Then connect the 1W power meter D MODE SW : CW STBY : SEND.  VFO : 435.000 M,T,W,X : 438.000 K	0.6W Power- meter O terminal		-2167-05 :04-0102-	05	TC1,2	Adjust the each coil for the MAX output repeatedly. Connect the coax. cable to the D0 terminal after adjust. (adjust L15 peak to center position of	0.30W or greater
6. Output	1) MODE SW : CW	Power-	**************************************	BXX8	IF	VR1	coil) Adjust to the	32W or greater
power	STBY: SEND VFC: 439.9999 M,T,W,X	meter (30W or			DISP	VR6	mechanical center.  26W (Setting value)	±1W, 7.5A or less
	: 449.9999 K	50W)			(B/8)			
7. ALC meter	1) POWER CONTROL : MAX MIC GAIN VR : MIN MODE SW : USB ALC/RF SW : ALC FREQ. : 145.000 STBY : SEND	ALC meter			IF	VR2	Adjust to the mechanical zero point.	RF meter "8"
	2) MODE SW : CW STBY : SEND				RF	TC2	Adjust for the MAX ALC meter reading.	
	5101.02.10				1F	VR3	RF "8"	
8, RF meter	1) MODE SW : CW FREQ. : 435.000 ALC/RF SW : RF	RF meter		i	Final	VR1	RF "8"	RF meter "8"
9. Protection	1) MODE SW : CW	DC V.M	IF	PRO (12-5)		VR2	MIN	
	Connect the ANT terminal to GND.	DC A.M			1F	VR1	4.0A	±0.1A
10. Carrier suppression	1) MODE SW: USB, LSB MIC GAIN: MIN POWER CONTROL: MAX	RF V.M Power- meter Oscillo- scope			IF	VR8 TC3	MIN or USB and LSB.	50dB or more
11. SSB frequency response	1) MODE SW: US6, LS8 MIC GAIN: Center AG output: Two-tone 2mV, 400Hz, 2600Hz STBY: SEND MIC GAIN VR: 25W	50W) Oscillo- scope	1 400H		<del>-                                    </del>	TC3 (USB) TC4 (LSB)		Adjust to within –9dB level at the 400Hz and the 2.6kHz from the 1.5kHz  Note: Confirm the carrier suppression after this adjustment.
		AG	2 2600⊦ 	lz <del>⊙ - <b>W</b>-</del> 10kΩ 	J ≱ 56			Adjust to the sharp cross poin
	2) AG output : Single tone 2mV, 1.5kHz MIC GAIN VR : 25W					TC3 (USB) TC4 (LSB)	400Hz, 2600Hz as	
	3) MODE SW : CW STBY : SEND	f.counter	PLL	TP5	PLL	VR2	10.69570MHz	±10Hz
1	4) MODE SW : FM	1				I VR3	10.6950MHz	±10Hz
12. FM FREQ.	1) Front panel CH.Q : ON DISPLAY : 435.000 MODE SW : FM STBY : SEND	Power- meter f,counter	DISP (D/8)	(V1) [	TS-811A/E		Adjust to 145.000 MHz on f.counter.	±10Hz

# TS-811 ADJUSTMENT

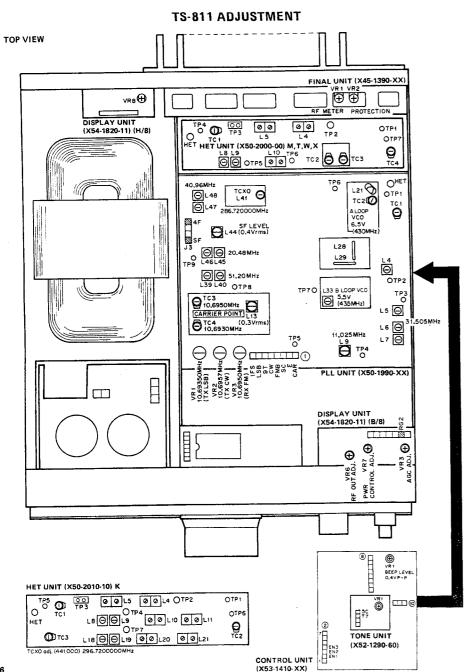
	j	Mea	sureme	nt		Ad	ljustment	
)tem	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
13. Deviation	1) PROC : OFF MODE SW : FM FREQ. : 435.000 STBY : SEND AG output : 1kHz, 20mV (30mV K)	AG Linear detector		ANT (Directio- nal coupler)	AF	VR3	4.6kHz	±0.1kHz
	2) AG output : 1kHz, 2mV (3mV <b>K</b> )					VR2	3kHz	±0.1kHz
14. Speech processor	1) PROC : ON MODE SW : FM FREQ. : 435,000 STBY : SEND AG output : 1kHz, 20mV (30mV K)	AG Linear detector			AF	VR2	4.1kHz	±0.1kHz
	2) PROC : OFF					Ī	1	1
15. SSB MIC sensitivity	1) MODE SW : USB MIC GAIN VR : Center AG output : 1kHz, 3mV	AG Power- meter					Confirm	15W or greater
16. CW side tone	1) MODE SW : CW AF GAIN VR : Center	AF V.M Oscillo-			AF	VR4	Key down 0.63V	±0.1V Confirm side tone output.
breakin	Connect KEY to KEY jack.	scope			Rear panel	VR8	Turn the VR8 and check break in function.	Delay time : VR8 MIN : Short time MAX : longer time
17. Beep tone	1) SQL VR : Center AF GAIN VR : Center M. IN : 1 push	AF V.M Oscillo- scope			CONT	VR1	0.4V/P-P	±0.1V Confirm tone output.
18. TONE (T)	1) MODE SW : FM TONE SW : ON STBY : SEND	Linear detector f. counter			TONE	VR1	Shorted wire bet- ween "TH" and "SC" on TONE unit. 1750Hz	DEV : ±2.5kHz ±5kHz
19. TONE ( <b>W</b> )	1) MODE SW : FM TONE SW : push (hold)				TONE	VR1	1750Hz	DEV : ±2.5kHz ±5kHz

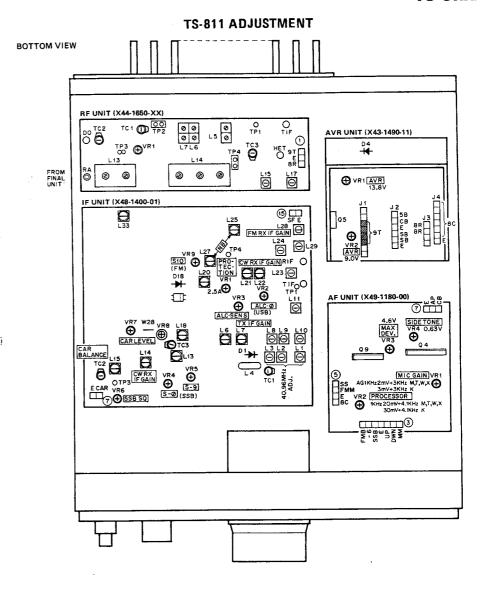
#### TS-811A/B/E ENCODER Section

		Me	sureme	nt		A	djustment	Specification/Remarks
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	
1. Encoder	Remove the VFO knob and motor-drive the encoder at approx. 300rpm.	Oscillo- scope	CONT	EN3 ( ② -4)			A STATE OF THE STA	Point C may be located anywhere. When a motor is not available, manually turn the VFO to check the duty ratio.
	EN1 duty ratio adjustment :     Turn both CW and CCW     CW : Clockwise     CCW : Counter clockwise			EN1 ( ② -2)	Enco- der	VR1	A	After adjusting with the VFO control turned CW, check that intevals D and E are also indentical when the VFO control is turned CCW.
	EN2 duty ratio adjustment :     Turn in the both directions.	,		EN2 ( ② -3)		VR2	Adjust until intervals D and E are equal to each other with point C placed at the center.	

# TS-811A/B/E

# TS-811A/B/E





# **ADJUSTMENT**

#### TS-711A/E, TS-811A/B/E

Microprocessor operation check

Item	Condition	Operation check
1. Reset	1) Set the Power SW ON,	Display :
	while depressing the A=B	14 s.a a a
	key. Then release	
	the A=8 key.	Ŷ <i>3</i> 3.000
		MODE SW : CW
		LED light on.
		The "Beeper" sounds.
		Encoder is the click position.
	11005 /	CW : "C" morse code
2. MODE	Change MODE (ex. : depress CW once)	Ex. FM ·······
function (FM,	Note : If depress same	USB
USB, CW	MODE key then same	cw
LSB,	morse code continuously	LSB
AUTO)	1110133 0300	AUTO · —
3. Encoder	1) MODE SW : FM (push	STEP LED K M1 M2 X T.W
3. Encoder	once) Turn the main dial	STÉP LED K,M1,M2.X T.W OFF 5kHz 12.5kHz
	knob to CW and CCW.	ON 5kHz 5kHz
		014 94.14
4. CH.Q	1) Push the CH.Q key once.	The plunger sounds.
(Channel		Display :
quick)		VFO A 144.000.0 100Hz
Ì		VFO B 434.000.0 order
1		Release click function on VFO knob.
5. A/B	1) Push the A/B key once	The plunger sounds. (Release click function)
	ļ	Display:
ł		
1		/ 4°.000.0
1		43° å.0 0 0.0
1		- " " "
1		MODE SW : CW, AUTO
		LED light on.
1	2) Push the A/B key again.	14 5.0 0 0
1		
1 .		4°3° 3.0 0 0
		The "Beeper" sounds.
6. STEP	1) Push the STEP key once.	STEP LED (orange) light on
ì		Up and Down each 10kHz
1	2) Turn the main dial CW	step. (VFO A, FM mode)
1	and CCW.	
İ	3) Push the CH.Q key once.	become fast step as of
1	(click off condition)	STEP off.
	U.B. In the CTER how online	
1	4) Push the STEP key again	(STEP function off)
ł		The "Beeper" sounds.
7.000	1) Push the SPLIT key once	
7. SPLIT	(VFO A and VFO B fre-	
	guency works for both	Ex.:
İ	TX and RX)	1 4 5.0 a
Į.	Transmitt	144.000.0
1		199.000.0
		A VED SPLIT
	1	43°5.000 43°4.0000
		4 3 4.0 0 0.0
	2) Push the SPLIT key aga	in Display : SPLIT light off.
)	)	(SPLIT function off)
1	1	

							<del></del>
	tem		Condi		-	Operation ne "Beeper" s	
	.≃B	1) F	oush the A=	B key once.		x. VFOA:1	
1 '	VFO A			т	1 - 7	11 VFOB:1	44 000.0
	nd VFO			1.	, ,	.,	
	become ame fre-	l		TS	8-8	11 VFO A : 4	35.000
	uency)	ļ			1	VFOB: 4	
"	derio ,	i			1		
1		2)	Push the A	'B key once	T	he "Beeper" :	sounds.
1		-				isplay change	
		1				nd shows sam	e frequency
_						s VFO A.	
9.0	сом сн	1)	Push the Co	DM key once.		he "Beeper"	
		1			10	COM LED : L	ignt on
1		1			١,	Display :	1
1					1,		
1						145.	000
1					1	1,75	000
1		ì					
1						In case COM (	
					1	the main dial	UP, DOWN,
					- ! '	CH.Q, A/B ST SCAN and M.	IN functions
		1				are not work.	
1		+-	Division Albert A	MHz SW (UP)	-	UP MHz orde	
10	), MHz	110	one by on		- 1	or push.	
1			one by on	с.	i	The "Beeper"	sounds each
		1				push.	
		2	Push the	MHz SW (UP)	Ī	UP MHz orde	r
ì		1	continuo		-	continuously	
		3	) Push the	MHz SW		Down MHz o	rder 1MHz
				one by one.	-	each one pust	
							' sounds each
		L				push.	
		4	) Push the		-	Down MHz o	
ΙL				continuously.	_	continuously	
1	1. SCAN	1		W : SCAN push	۱ ۱	The "Beeper	t light winks.
Н.	<b>-</b>		once.				after 6 seconds.
S	CAN Step		C #1=1-	Display 5 digit	Tr		Display 6 digit
1 11		UISF	olay 5 digit	STEP : ON	1	appropriate a	STEP : ON
-	I	- 22	N. Ha seen	10kHz step	1	5kHz step	5kHz step
1 11	FM CW, SSB		kHz step	1kHz step	+	1kHz step	1kHz step
$ \cdot _{\mathcal{L}}$	CVV, 35B	<del></del>			=		
] ]		1	2) STBY : S			Stop SCAN	
				art : Push SCA	Ν	The "Beeper	
1 L			again.			(SCAN stop	
4 17	2. Memo			M,IN key once	₹.	The "Beeper (Memorized	
11	(Write	9)	(Desire f	requency)			requency) as memorized
		1				with any mo	
		-	2) MODE S	W : CH.S push	_	The "Beepe	
			once.	ity . Ci i.o pusii			orks only on
				in dial CW.			Changes only
		- 1	Ex. Set 1			on M.CH di	
11		- }				1	
11		-					e" aguada
		1		SW : CH. S pus	n	The "Beepe	vorks as VFO
┨ ┃			again.			knob)	
1		+	4) Memo is	up to 40 char	nne		er'' sounds each
11			followin	g 1), 2), 3).		M IN, CH.	

# **ADJUSTMENT**

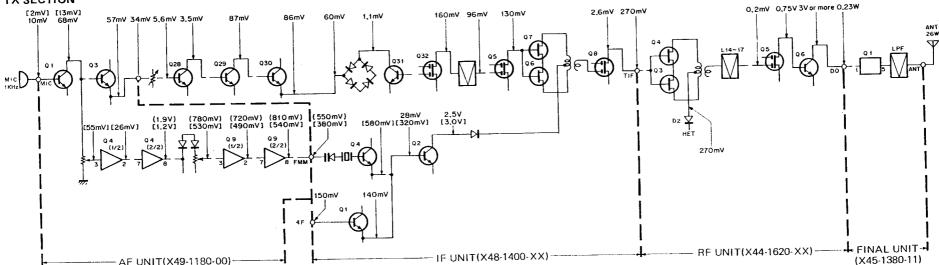
# TS-711A/E, TS-811A/B/E DCS (Digital Code Squelch) system operation check

		Operation check	item	Condition	Operation check
Item 13. Memory (Recall)	Condition  1) Recall memorized frequency at item 12. Push the VFO/M key once.	The "Beeper" sounds. Display: 0: 144.030 0: 433.030	1. Digital code input	Display : any     Push the CS key once.	The "Beeper" sounds. Display:  CO OOO OO  (Digital code has 5 digits and can input 9 kind)
	2) Tuning the main dial  3) Push the VFO/M key again.	Which is MEMO IN on CH1  Display shows memorized CH and frequency. The "Beeper" sounds Display shows VFO fre-		2)-Digital code input MODE SW : FM-CH,S has dual function as digital code and each key works; FM : 1-CH,S : 0	SCAN M.IN FEVA A. CH.S. Each one input makes "Pi" sound and each 5 digit
14. M <b>≻</b> V	1) Transfer MEMO frequency to VFO.  Ex. MEMO frequency : 144.800 : 433.800 VFO A frequency : 144.000 : 434.000 Push the MrV key once.	quency.  1 Display  *** *** *** *** *** *** *** *** ***		3) Turn main dial one click CW, and input digital code following step 2).  4) Input digital code for \$\mathcal{E} O \times C \mathcal{G}\$ turning main dial.  5) Push the D.SQ key when digital code has displayed.	input makes "Pee" sound.  Display:  C I O O O O  Confirm "Pee" sound at each 5 digit input.  CO-—Dot light winks.  If push the D.SQ key again,
15. Frequency	1) MODE SW : REV & LOCK push once. 2) Turn main dial CW and	Display has transfer 1 to 2 The "Beeper" sounds. REV & LOCK LED light on. Confirm the display does	2. Call sign input	Push the C.AL key while digital code has displayed.     Push the C.AL key again.	this dot has disspear.  The "Beeper" sounds.  C - 0 0 0 0 0 0 0  Tst 2nd 3rd  C = 0 0 0 0 0 0
	CCW.  3) MODE SW : REV & LOCK push again.	not change. The "Beeper" sounds. REV & LOCK LED light off. (Freq. lock free)			4th 5th 6th Ex.: J A 1 Y K X ↑ ↑ ↑ ↑ ↑ ↑ 74 65 49 89 75 88
16. Alert (AL)	1) MODE SW : AL push once 2) RX : 6 seconds each 3) MODE SW : AL push again	The "Beeper" sounds. Display shows AL. Confirm the "Beeper" sounds. The "Beeper" sounds AL sign disapear.	3. DCS system	1) Set monitor's radio to condition below. Digital code: 6 7 8 9 0 MODE SW: FM DCS: ON  2) MODE SW: FM VFO: 146.0000 Push the DCS key once.  3) Push the CS key once.	DCS LED light on.
				3) Push the CS key once. Push the 6, 7, 8, 9, 0 key each time. Push the CS key once after checks. 4) Push the D.SQ key once. SQL VR: MIN 5) Push the C.AL key once. Monitor: SEND Push the C.AL key once after check.	D.SQ LED light on. Squelch closed. C. AL LED light on. Squelch opened. D. SQ LED light off. The "Beeper" sounds. (Mon'to's radio: "Beeper" sounds heard during transmit.) "Beeper" sounds heard wnen TX.

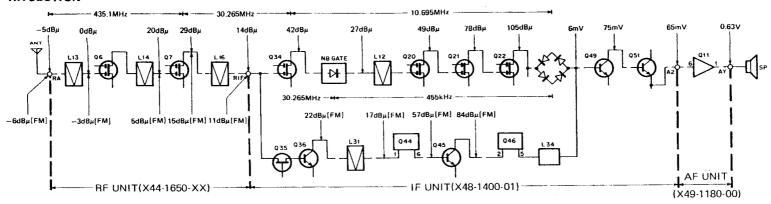
#### **RX SECTION** 10,695MHz -30,265MHz 0,63V 105dBµ 784Ru 27dBp 12dBu 42dBy 11dBu 30.265MHz 15dBy(FM) 52dBy(FM) 77dBy(FM) 20dBu[FM] 8dBu[FM] 16dBu[FM] 8dBu[FM] FM1)ب(BbB--6dBu (FM) AF UNIT IF UNIT(48-1400-XX) (X49-1180-00) RF UNIT(X44-1620-XX)

- 1. First, set the AF gain control for an audio output of  $0.63 V/8 \Omega$  for an SSG input signal at  $145.1 MHz/-6 dB\mu$ , applied to the antenna terminal, the AF gain control is now fixed. Thereafter, only the SSG signal level injected at each point is varied, as required to obtain the same audio output.
- 2. In the FM mode, the SSG signal level at each point required to obtain the same S/N ratio as that at initial input of the reference  $-6dB\mu$  is taken.
- 3. In the stages after the product detector, the AF output level is measured.
- 4. Level measurement is made with a 0.01 µF titanium oxide porcelain capacitor connected to the SSG output.
- 5. For level measurement at the RA terminal point, the SSG cable connection is changed to this terminal.



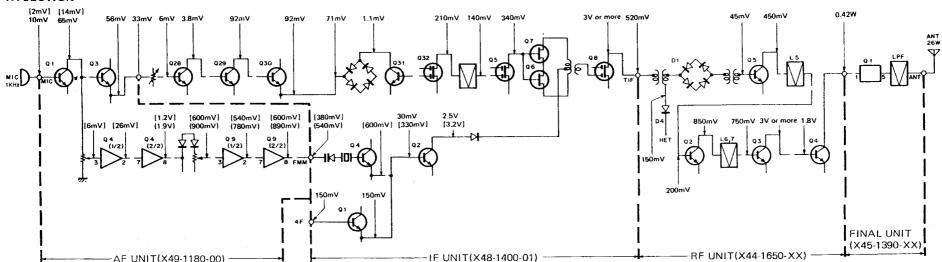


- 1. Frequency: 145.10MHz
- 2. For level measurement before pin DO in the RF unit, the coaxial cable connected to pin DO is disconnected.
- 3. In IF & RF sections, measurements are taken by an RF VTVM in the CW mode. In AF sections, it is taken by an AF VTVM in the USB mode. In this case, the values in [ ] are with the FM mode processor OFF, and those in ( ) are with the FM mode processor ON.
- 4. The audio input voltage in the USB mode, is a 1kHz signal tone which gives a nearly full-scale reading within the ALC range. In the FM mode, it is that which gives the standard modulation degree (±3kHz deviation).



- First, set the AF gain control for an audio output of 0.63V/8Ω for an SSG input signal at 435.1MHz/-6dBμ, applied to the antenna terminal, the AF gain control is now fixed. Thereafter, only the SSG signal level injected at each point is varied, as required to obtain the same audio output.
- 2. In the FM mode, the SSG signal level at each point required to obtain the same S/N ratio as that at initial input of the reference 6dBμ is taken.
- 3. In the stages after the product detector, the AF output level is measured.
- 4. Level measurement is made with a  $0.01\mu F$  titanium oxide porcelain capacitor connected to the SSG output.
- For level measurement at the RA terminal point, the SSG cable connection is changed to this terminal.

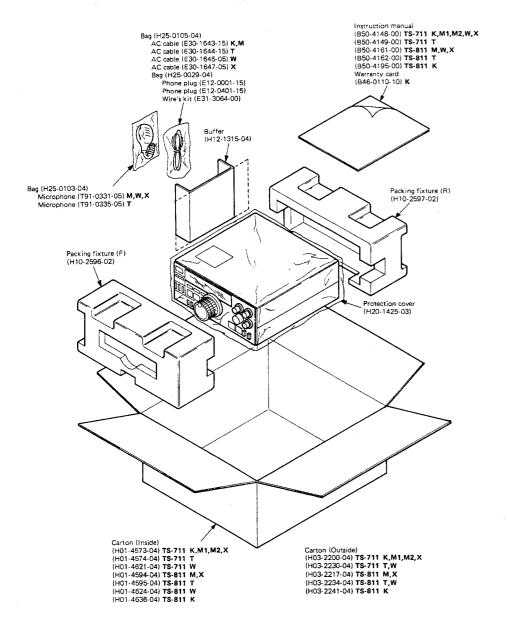
#### TX SECTION



- 1. Frequency: 435.10MHz
- 2. For level measurement before pin DO in the RF unit, the coaxial cable connected to pin DO is disconnected.
- 3. In IF & RF sections, measurements are taken by an RF VTVM in the CW mode. In AF sections, it is taken by an AF VTVM in the USB mode. In this case, the values in [ ] are with the FM mode processor OFF, and those in ( ) are with the FM mode processor ON.
- 4. The audio input voltage in the USB mode, is a 1kHz signal tone which gives a nearly full-scale reading within the ALC range. In the FM mode, it is that which gives the standard modulation degree (± 3kHz deviation).

# TS-711/811

## **PACKING**



## TERMINAL FUNCTION

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function
	SWI	TCH UNIT	Γ (X41-1580-XX)
1			
2	1 2 3 4 5 6 7	FS FL DC CL CS E BD TL	Frequency STEP LED Frequency LOCK LED DCL LED CHL LED CSQ LED GND (Earth) Busy Display TX LED
3	1 2 3 4 5 6 7 8	FS FL DC CL CS CA BD TL	Frequency STEP LED Frequency LOCK OUT DCL LED CHL LED CSQ LED CALL LED Busy Display TX LED
4	1 2 3 4 5 6 7 8 9 10 11 12	A1 A2 A3 A4 A5 A6 B0 B1 B2 B3 B4 B5 B6	Port A1 Port A2 Port A3 Port A4 Port A5 Port A6 Port B1 Port B2 Port B3 Port B4 Port B5 Port B6 Port B6 Port B7 Port B7 Port B8 Port B8 Port B8 Port B8 Port B8 Port B6 Port B
\$	1 2 3 4 5 6 7 8 9 10	C5 C4 C3 C2 C1 C0 A6 A5 A4 A3 A2 CA	KEY Line C5 KEY Line C4 KEY Line C3 KEY Line C2 KEY Line C1 KEY Line C1 KEY Line C0 Port A6 Port A5 Port A4 Port A3 Port A2 CALL LED
6	1 2 3 4 5 6	E NBS BD 9T E2 E1	GND (Earth) Noise Blanker Switch Busy Display TX 9V RIT ENCODER PULSE 2 RIT ENCODER PULSE 1
T	1 2 3 4 5 6 7 8	E ANI MM SS ANI E ANO E	GND (Earth) Analog input MIC MUTE Standby Switch Analog input GND (Earth) Analog output GND (Earth)
8	1 2	ACS RL	Accessory Switch TS-811 only

Connec-	Termi-	Terminal	
tor No.	nal No.	name	Terminal Function
	1	A6	Port A6 KEY SCAN output
<b>@</b>	2	E A5	GND (Earth) Port A5 KEY SCAN output
9	3	B0	Port B0 KEY SCAN dutput
	5	A4	Port A4 KEY SCAN output
	1	AU	AUTO LED
	2	L\$	LSB LED
100	3	CW	CW LED
	4	US FM	USB LED FM LED
	1	FM	FM LED
_	2	US	USB LED
10	3	CW	CW LED
	4 5	LS AU	LSB LED AUTO LED
	1	ME	Meter +
12	2	E	GND (Earth)
	1	PRS	Processor Switch
	2	RM	RF Meter
	3	ALM	ALC Meter
(13)	5	FSM SM	FM S Meter SSB S Meter
1 .0	6	SB	Switched B (13.8V)
	7	RL	Relay
ł	8	ACS	Accessory Switch TS-811 only
	9	E	GND (Earth)
	Α.	VR UNIT	(X43-1490-11)
	1	TH1	Thermister 1
1	2	TH2	Thermister 2
	3	9T	GND (Earth) TX 9V
①	5	9T	TX 9V
~	6	9T	TX 9V
	7	9T	TX 9V
	8	ATX	Anti-TX (No TX when 0V)
<del> </del>	9	ST 5B	Standby output B for 5C
1	2	CB	Common B
(2)	3	ε	GND (Earth)
"	4	SB	Switched B (13.8V)
	5	SB	Switched B (13.8V)
<u> </u>	1	8R	GND (Earth)
_	2	8R	RX 8V
3	3	8R	RX BV
	4	8R	RX 8V
	1	8C	+ 8V
	2	8C	+8V
4	3	8C 8C	+ 8V + 8V
"	5	8C	+8V
1	6	8C	+8V
	7	E	GND (Earth)
(5)	1	В	+ B , , Switched B (12 BV)
<u> </u>	1	SB FAN	Switched B (13,8V) FAN Motor
	2	SB	Switched B (13.8V)
6			
"		İ	}
1			
	<u>L</u>	<u> </u>	

# TERMINAL FUNCTION

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function
	1	В	+ B
	2	FB	FINAL B (13.8V)
(7)	3	BB	+B (22∨)
$\boldsymbol{\omega}$	4	BA	AVR Transistor Base
	5	EM	AVR Transistor Emitter
	6	EM	AVR Transistor Emitter
_	1	88	
8	2	co	AVR Transistor Collector
	3	E	GND (Earth)
	1	В	+ B
	2	FB	FINAL B (13.8V)
<b>(a)</b>	; 3	88	+B (22V)
9	4	BA	AVR Transistor Base
	5	EM	AVR Transistor Emitter
	6	EM	AVR Transistor Emitter
	RFL	NIT (X44	-1620-XX) TS-711
	1	RL	Relay
	2	CV	Control Voltage
①	3	9T	TX 9V
~	4	E	GND (Earth)
	5	8R	RX 8V
			4-1650-XX) TS-811
	1	9T	TX 9V
1	2	E	GND (Earth)
_	3	8R	RX 8V
-	FINA	L UNIT (X	(45-1380-11) TS-711
		()	(45-1390-XX) TS-811
	1	PRO	Protection
_	2	RM	RF Meter
1	3	TH1	Thermister 1
	4	9T	TX 9V
	5	PC	Power control
	1	EM	AVR Transistor Emitter
2	2	co	AVR Transistor Collector
•	3	FB	FINAL B (13.8V)
	4	BA	AVR Transistor Base
			(48-1400-XX)
1	1	4F	4th Frequency
	2	E	GND (Earth)
	1	E	GND (Earth)
2	2	FMM	FM MIC
_	3	то	Tone out (Tone input terminal)
	4	E	GND (Earth)
	1	9T	TX 9V
	2	9T	TX 9V
	3	CWB	CW +B (8V)
<b>@</b>	4 5	FMB	FM +B (8V) FM RX +B
3			FM/CW +B
	6 7	FCB 8R	RX 8V
		1	RX 8V
	8	8R	SSB/CW +B (8V)
	9	SCB	
	1	9T	TX 9V
	2	CWT	CW TX +B (8V)
	3	NC	Not connection
4	4	FMB	FM +B (8V)
~	5	8C	+8V
			1
		1	1

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function
	1	SCR	SSB/CW RX + B
	2	SCR	SSB/CW RX + B
(5)	3	-6	<b>–6∨</b>
	4	8C	+8V
	5	8C	+8V
	6	SM	SSB S Meter
	1	SSB	SSB + B
<u> </u>	2	SSB	SSB + B
6	3	RG2.	RF Gain volume 2
ł	5	SSQ.	GND (Earth) SSB Squeich
-	1	CAR	
7	2	E	Carrier * GND (Earth)
	1	MV2	MIC Volume 2
	2	E	GND (Earth)
(8)	3	FCB	FM CW + B
	4	P1	Power Control 1
	5	9T	TX 9V
	1	BT	Modern Receive Output
9	2	Ε	GND (Earth)
	1	FSM	FM S Meter
1	2	sc	Scan Control
	3	BD	Busy Display
	4	sa	Squelch Volume
(10)	5	8C	+8V
	6		
	7		
	8	·	1
<u> </u>	9	AL	Alert Mute
1 10	1	KEY	KEY
<u> </u>	2	STS	Side Tone Switch
	1 2	8C SSB	+ 8V SSB + B
12	3	ALM	ALC Meter
1 10	4	P2	Power Control 2
	5	PRO	Protection
<u> </u>	1	88	RX 8V
	2	SCR	SSB/CW RX + B
	3	SSQ	SSB Squelch
13	4	E	GND (Earth)
	5	FMR	FM RX + B
1	6	BLK	Blanking Pulse
	7	NBS	Noise Blanker Switch
14)	1	A1	Audio Volume 1
<u> </u>	2	E	GND (Earth)
15)	1	SF	Standby Frequency
$\vdash$	2	E	GND (Earth)
	A		(49-1180-00)
	1	8M	MIC 8V
1	2	MIC	MIC AF input
(1)	3	E	GND (Earth)
1	4 5	UP	MIC UP MIC DOWN
	6	DW SS	
-	4	+	Standby Switch
	1	PRS	Processor Switch
	2	MV1	MIC Volume 1
2	3	AN1 E	Analog input GND (Earth)
"	5	FE	Floating earth
1			1
1	1	1	1

# **TERMINAL FUNCTION**

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function		
	1	MM	MIC Mute		
	2	DW	MIC DOWN		
_	3	UP	MIC UP		
3	4	Ε	GND (Earth)		
	5	SSB	SSB + B		
	6	6	-6V		
	7	FMB	FM + B (8V)		
	1	8C	+ 8∨		
4	2	E	GND (Earth)		
•	3	FMM	FM MIC		
	4	SS	Standby Switch		
	1	STS	Sidetone Switch		
	2	STS	Sidetone Switch		
(5)	3	KEY	KEY		
•	4	KEY	KEY		
	5	DE	Delay		
	1	ANO	Analog output		
	2	E	GND (Earth)		
	3	A1	Audio Volume 1		
	4	E	GND (Earth)		
<b>(6</b> )	5	A1	Audio Volume 1		
•	6	E	GND (Earth)		
	7	A2	Audio Volume 2		
	8	E	GND (Earth)		
			l e		
	9	BZ	Beep out		
_	1	E	GND (Earth)		
7	2	AP	Audio Power		
	3	СВ	Common B		
	PL	L UNIT ()	(50-1990-XX)		
	1	CAR	Carrier .		
	2	E	GND (Earth)		
	3	8C	+8∨		
①	4	FMB	FM + B (8V)		
U	5	CWT	CW TX + B (8V)		
	6	9T	TX 9V		
	7	LSB	LSB + B (8V)		
	8	IFS	IF Shift Voltage		
	1	CP	PLL Clock		
	2	DP	PLL Data		
	3	EA	PLL A Enable		
2					
	4	EB	PLL 8 Enable		
	4 5	EB E	PLL 8 Enable GND (Earth)		
	4 5 6	EB E CV	PLL 8 Enable GND (Earth) Control Voltage		
<u> </u>	4 5 6	EB E CV SF	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency		
(3)	4 5 6	EB E CV SF E	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth)		
3	4 5 6 1 2 3	EB E CV SF E	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth)		
3	4 5 6 1 2 3 4	EB E CV SF E E	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency		
3	4 5 6 1 2 3 4	EB E CV SF E E 4F	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit		
	4 5 6 1 2 3 4	EB E CV SF E E 4F 4FH E	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit GND (Earth) TS-811		
3	4 5 6 1 2 3 4	EB E CV SF E E 4F	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency GND (Earth) TS-811 +8V only		
	4 5 6 1 2 3 4	EB E CV SF E E 4F 4FH E	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit GND (Earth) TS-811		
4	4 5 6 1 2 3 4 1 2 3 4	EB E CV SF E E 4F 4FH E 8C BS	PLL 8 Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency GND (Earth) TS-811 +8V only		
4	4 5 6 1 2 3 4 1 2 3 4 HET UNI	EB E CV SF E 4F 4FH E 8C BS T (X50-20 (X50-20	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit GND (Earth) + 8V only Band Select K only  00-00) TS-811 M,T,W,X 10-10) TS-811 K		
4	4 5 6 1 2 3 4 1 2 3 4 4 HET UNI	EB E CV SF E E 4F 4FH E 8C BS T (X50-20 (X50-20	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency 4th Frequency 5th Ts-811 4th 6th Ts-811 6th Ts-81 6th Ts-81 6th Ts-811  4 1 2 3 4 4 HET UNI	EB E CV SF E E 4F 4FH E 8C (X50-20) (X50-20) E 4FH	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency 4th Frequency GND (Earth) TS-811 48V Band Select K only  GND (TS-811 M, T, W, X GND (Earth) GND (Earth) TS-811 K GND (Earth) TS-811 K GND (Earth) TS-811 K GND (Earth)
4	4 5 6 1 2 3 4 4 1 2 3 4 4 1 2 3 4 4 1 2 3 3 4 4 1 2 3 3 4 1 3 3 4 3 4	EB E CV SF E E 4FH E 8C BS T (X50-20 E 4FH 8C	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency of HET unit H8V Band Select K only 00-00) TS-811 M,T,W,X 10-10) TS-811 K GND (Earth) 4th Frequency from PLL unit H8V SON (Earth) 4th Frequency from PLL unit H8V SON (Earth) H8V SON (Earth) H8V SON (Earth) H8V SON (Earth) H8V SON (Earth) H8V SON (Earth)		
4 F	4 5 6 1 2 3 4 1 2 3 4 4 HET UNI:	EB E CV SF E E 4F 4FH E 8C (X50-20 E 4FH BC BS	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency 4th Frequency for HET unit 1 + 8V Band Select K only  GND (Earth) 4th Frequency for HET unit 1 + 8V GND (Earth) 4th Frequency for HET unit 1 + 8V GND (Earth) 4th Frequency from PLL unit 1 + 8V Band Select K only		
4 F	4 5 6 1 2 3 4 1 1 2 3 4 1 1 2 3 4 TONE	EB E CV SF E E 4F 4FH E 8C (X50-20 E 4FH 8C BS	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency of HET unit H8V Band Select K only 00-00) TS-811 M,T,W,X 10-10) TS-811 K GND (Earth) 4th Frequency from PLL unit H8V SON (Earth) 4th Frequency from PLL unit H8V SON (Earth) H8V SON (Earth) H8V SON (Earth) H8V SON (Earth) H8V SON (Earth) H8V SON (Earth)		
4 h	4 5 6 1 2 3 4 1 1 2 3 4 4 TONE	EB E C C C SF E E F F F F F F F F F F F F F F F F	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency 4th Frequency 4th Frequency GND (Earth) TS-811 8V GND (Earth) GND (Earth) TS-811 K GND (Earth) GND (Earth) TS-811 K GND (Earth) TS-8		
<b>4</b>	4 5 6 1 2 3 4 1 2 3 4 4 TONE 1 2 3 4	EB E C C C C C C C C C C C C C C C C C C	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency 4th Frequency 4th Frequency for HET unit 1 + 8V Band Select Konly  GND (Earth)  GND (Earth)  GND (Earth)  GND (Earth)  GND (Earth)  GND (Earth)  GND (Earth)  TS-811  M,T,W,X  10-10) TS-811 M,T,W,X  10-10) TS-811 K  GND (Earth)  4th Frequency from PLL unit +8V Band Select Konly  52-1290-60) T,W only  Tone on: H (5V)		
4 h	4 5 6 1 2 3 4 1 1 2 3 4 4 TONE	EB E C C C SF E E F F F F F F F F F F F F F F F F	PLL 8 Enable GND (Earth) Control Voltage  Standard Frequency GND (Earth) 4th Frequency 4th Frequency 4th Frequency GND (Earth) TS-811 8V GND (Earth) GND (Earth) TS-811 K GND (Earth) GND (Earth) TS-811 K GND (Earth) TS-8		

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function	
		TROL UN	T (X53-1410-XX)	
	1	E	GND (Earth)	$\dashv$
①	2	E2	RIT ENCODER PULSE 2	- 1
•	3	E1	RIT ENCODER PULSE 1	- 1
	1	Ε	GND (Earth)	
	2	EN1	MAIN ENCODER PULSE 1	!
•	3	EN2	MAIN ENCODER PULSE 2	1
2	4 5	EN3 5C	MAIN ENCODER PULSE 3 Common 5V	0
	6	PS	PLANGER SENSOR	ĭ
	7	PN	PLANGER SWING PULSE	0
	1	FS	Frequency STEP LED	0
	2	FL	Frequency LOCK LED	0
(a)	3	DC	DCL LED	0
3	4	CL	CHL.LED	0
	5	CS	CSQ LED	0
	6	CA	CALL LED MIC MUTE	
	1 2	MM MM	MIC MUTE	0
	3	SQS	Squelch Select	ő
_	4	BLK	Blanking Pulse	ō
4	5	AL	Alert Mute	0
	6	DW	MIC DOWN	- 1
	7	UP	MIC UP	1
	8	: SC	SCAN Control 5.4V (Busy :	H) I
	1	E	GND (Earth)	
	2	WR RD	Write strobe Read strobe	0 0
(5)	4	CS	Chip Select	0 0
	5	C/D	Common/Data	0
	6	RDY	Receiver Ready	1
	7	SB	Switched 8 (13.8V)	- 1
	1	D7	Data Bus 7	1/0
	2	D6	Data Bus 6	1/0
-	3	D5	Data Bus 5	1/0
6	5	D4 D3	Data Bus 4 Data Bus 3	1/0
	6	D2	Data Bus 2	1/0
}	7	D1	Data Bus 1	1/0
1	8	D0	Data Bus 0	1/0
	9	RES	Reset	0
	1	Т1	Tone data 1	0
	2	T2	Tone data 2	0
	3	T3	Tone data 3 K,M,X	0
	5	T5	Tone data 4 only Tone data 5	0
7	6	T6	Tone data 6	ō
	7	5C		ō
	. 8	TH	Tone on: H (5V)	0
	9	TI	Tone input	1
	10	E	GND (Earth)	
	1	PSQ		0
1	2	PS1 PS2		0
	4	PS3	VS-1	0
8	5	PS4		Ö
	6	SR		ō
1	7	BY		1
	8	5C1	]	0
1	1	1		
İ	ì			
l				

# TS-711/811

# TERMINAL FUNCTION

Connec- tor No.	Termi- nai No.	Terminal name	Terminal Function	
	1 ,	TO	Tone out	0
	2	E	GND (Earth)	
	3	AN1	Analog input	0
9	4 5	E BT	GND (Earth) Modem Receive Input	٠, ا
	6	E .	GND (Earth)	'
	7	BZ	Beep out	0
j	8	E	GND (Earth)	
	-1	8C2	)	0
100	2	E	}- ∨S-1	
ļ	3	VO	J	<u> </u>
	1 2	58 E	B for 5C GND (Earth)	ı
10	3	ST	Standby out	0
	4	SB	Switched B	Ī
	1	DD	PLL Data	0
1 .	2	E	GND (Earth)	
12	3	CP	PLL Clock	0
1	4	EA	PLL A Enable PLL B Enable	0
	5	EB 11C	Common 11V	
1	2	-6V	-6V	ï
1	3	DD	Display Data	ò
13	4	CD	Display Clock	0
`	5	ED	Display Enable	0
1	6	5C	Common 5V	0
<u> </u>	7	E	GND (Earth)	
1	1	CWB CWB	CW + B (8V)	0
	2	CWB	CW + B (8V)	0
İ	4	FMB	FM + B (8V)	ō
14)	5	FMB	FM ≠ B (8V)	0
1	6	LSB	LSB + B (8V)	0
	7	SCB	SSB/CW + B (8V)	0
	8	SSB	SSB + B (8V) SSB + B (8V)	0
	10	ATX	Anti-TX	0
	11	8C	Common 8V	ō
	1	AU	AUTO LED	0
	2	LS	LSB LED	0
13	3	CW	CW LED	0
	4	US	USB LED	0
	5	FM -6	FM LED	-
1	2	-6	-6V	0
16	3	SS	Standby Switch	ı
	4	SS	Standby Switch	1
	1	A1	Port A1	0
	2	A2	Port A2	0
1	3	A3	Port A3 KEY SCAN output	0
1	4	A4	1.01	0
	5	A5 A6	Port A5	0
1	7	80	Port BO	1
17	8	B1	Port B1	i
	9	B2	Port B2 KEY SCAN	- 1
1	10	B3	Port B3 input	1
	11	B4	Port 84	1
	12	85 86	Port B5 J Port B6 VOICE Switch	,
		50	. S., BO FOIGE STREET	•
]		1		

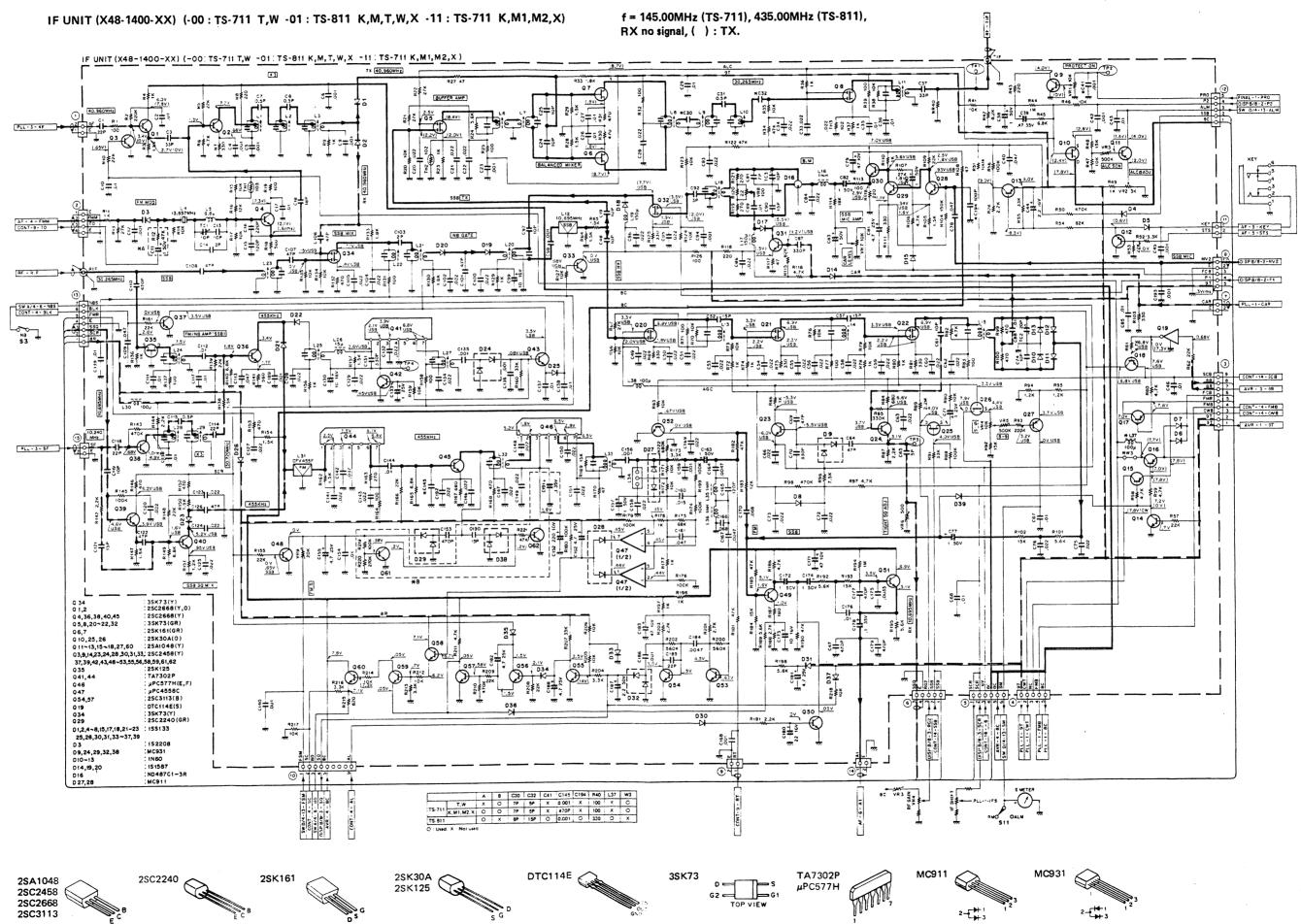
Connec-	Termi-	Terminal	Terminal Function
tor No.	nai No.	пате	
			T (X54-1820-11)
1	1	APO	Audio Power out GND (Earth)
1	2	E AP	Audio Power
	4	Ē	GND (Earth)
	1	PC	Power Control
	2	E	GND (Earth)
	3	MV2	MIC Volume 2
2	4	Ε	GND (Earth)
•	5	MV1 P1	MIC Volume 1 Power Control 1
	7	E	GND (Earth)
	8	P2	Power Control 2
	1	sas	Squelch Select
	2	SCR	SSB/CW RX + B
	3	IFS	IF Shift Voltage
3	5	SQ 8C	Squeich Volume
	6	RG2	RF Gain Volume 2
	7	E	GND (Earth)
	1 1	APO	Audio Power out
4)	2	E	GND (Earth)
•	3	AP	Audio Power
	4	E	GND (Earth)
	İ	E	GND (Earth)
	2	5C ED	Common 5V Display Enable
(5)	4	CD	Display Clock
•	5	DD	Display Data
	6	6	-6V
	7	11C	Common 11V
	1	E	GND (Earth)
	2	8M UP	MIC BV
6	4	DW	MIC DOWN
•	5	SS	Standby Switch
	6	MIC	MIC AF input
	7	E	GND (Earth)
7	1	E	GND (Earth)
$\overline{v}$	2	SP	Speaker
	1	DE	Delay
	3	E APO	GND (Earth) Audio Power out
8	4	SS	Standby Switch
•	5	SS	Standby Switch
	6	KEY	KEY
	7	STS	Sidetone Switch
	8	CWB	CW + B (8V)
			S'Y (W02-0364-00)
1	1	E	GND (Earth)
	2	EN1 EN2	MAIN ENCODER PULSE 1 MAIN ENCODER PULSE 2
	4	EN2	MAIN ENCODER PULSE 3
1	5	5C	Common 5V
	6	PS	PLANGER SENSOR
l	7	PN	PLANGER SWING PULSE
	1		
		1	
1	1		
I	1	1	1

X48-1400-XX 027 L33 232 | 265 W17 | 301 | 402 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4038 | 4 240 CIZ4 R150 C123 , 153 - 153 - 153 C162 R170 R141 920 22 3 <u>R172</u> <u>R199</u> C164 C165 C152 C126 023 023 R154 C116 ` ≥ 2 R140 C127 R148 O L28 R153 R139 R174 R175 R178 \*R221 C154 \*R219 84 \*R155 84 \*C188 00 135 Q39 037 C109 24(E) S8N D25 053 053 GET L29 <u>0139</u> L24 R63 BB R186 R186 C134 R137 = 1 L27 R136 8 25 E Ø 18 R129 0108 099 R160 C102 L21 L23 L22 0101 C106 R133 L20 191 R40 C47 R135 Q9 VR3 C103 V R 1 R134 C98 --₩29 C42 5 PRO 043 R41 R12 R45 R45 R44 L12 010 **06**5 W 24 ALM SSB 18C C20 C86 Q32 — G1 R48 R219-R34 C3 1 8 R35 C30 R126 G2 R124 81 R38 C40 R29 R47 R122 A. 151 QQ, R123  $\times$  0 Ğ2<del>3'</del> C<u>3</u>1 85 81 C92 R22 C32 G205<sub>D</sub> L18 R20 C24 C25 E D16 C193 \*C194 R102 C73 8 R21 L6 L7 L9 L10 C50 <u>R69</u> R64 W3, 'TC3 C52. 070 C GI C19<sub>R23</sub> R27 Q. 75. R28 W C29 18 657 0 D 2 R9 ç R 70 L3 L2 L13 245 049 L14 PS 27.8 U 026 C73 R71 C16 R84 2) R19 C12 TH1 R15 A - 3 C 64 066 5 SSQ 9 RG2 8C 5 -80 -80 -80 SSB (e) SCB 667 (9)

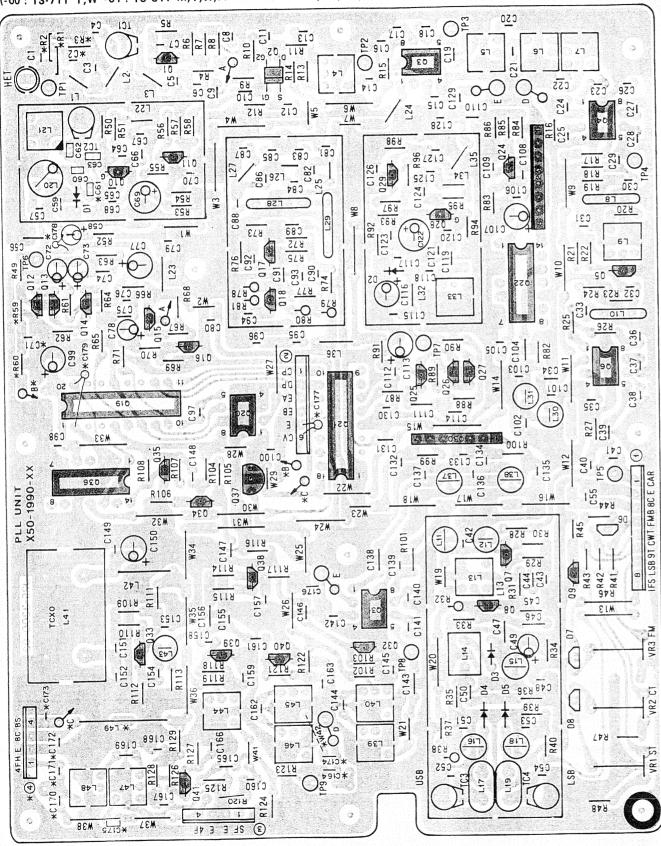
F UNIT (X48-1400-XX) Component side view (-00 : TS-711 T,W -01 : TS-811 K,M,T,W,X <u>-</u> TS-711

K,M1,M2,X)

# CIRCUIT DIAGRAM/PC BOARD VIEW TS-711/811



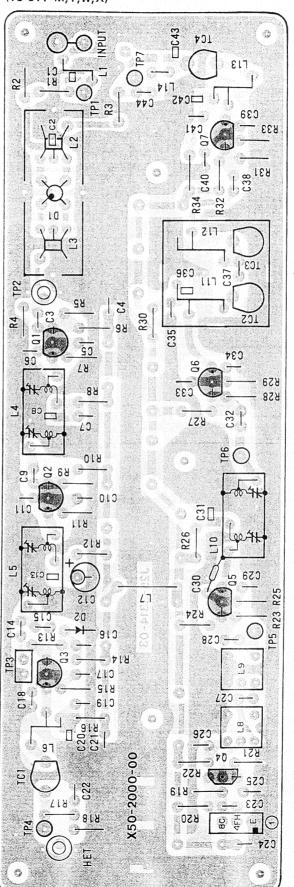
- <u>- 6 6 6 c</u> (1) 4 (3) 6 Q1,5,11,17,18,29,40 :2SC2668(Y) Q2 :3SK73(Y) Q3,4,6,31 :SN16913P 020 021 022,36 023 #P8555C MC145155P # K SN74LS90N M54459L Q2 Q3,4,6,31 Q7,8,41 Q9,16,33~35,38,39 Q10,28, 2SC2787(L) 2SC2458(Y) 2SK192A(GR)\*N Q24,32 Q30 Q37 : 2SC 2668(Y,0) : TA7302P : NJM78L05A QI2~I4,25~27 QI5 QI9 :25C2459(BL) :25A1048(Y) :MC145156P 3SK73 2SK192A 2SA1048 M54459L NJM78L05A TA7302P MC921 2SC2458 2SC2459 2SC2668 2SC2787



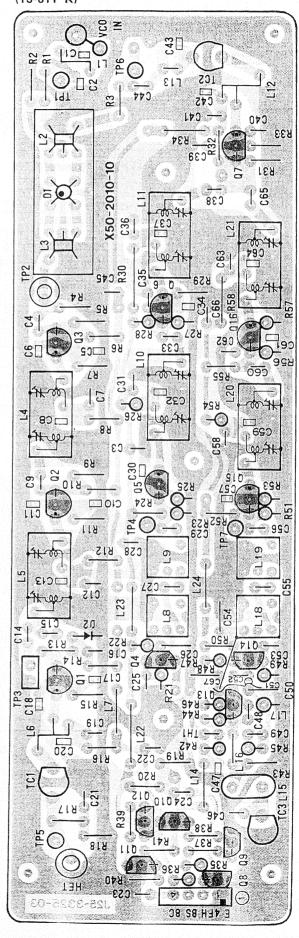
		149	R1	B2	R3	R59,60	C2	C61	C71	C164	C170	C171-175	C177	C178,179	W42	4	В	С
	T 144	L43	0	X	0	0	0	X	0	0	0	×	0	Х	Х	Χ	0	X
TS-711	1,00	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0	×	0	0	0	0	0	0	0	X	0	X	×	X	0	X
	K,M1,M2,X	^	<u> </u>		V	×	X	X	X	X	X	0	X	0	0	0	X	0
TS-811	M, I, W, X	0				\ \ \ \ \ \	Y	×	X	×	X	0	X	0	0	0	Х	0

O: Used X: Not used

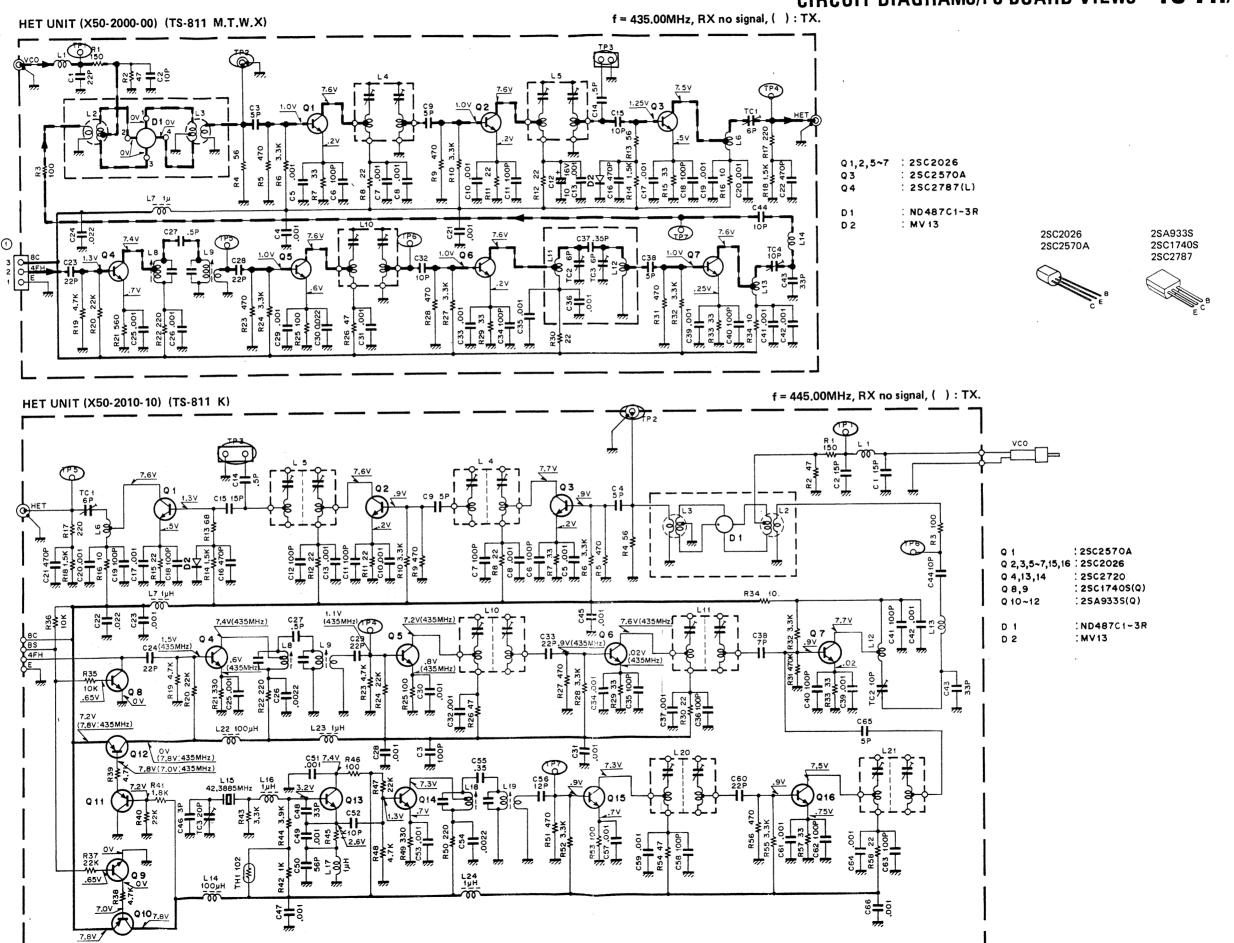
HET UNIT (X50-2000-00) Component side view (TS-811 M,T,W,X)



HET UNIT (X50-2010-10) Component side view (TS-811 K)

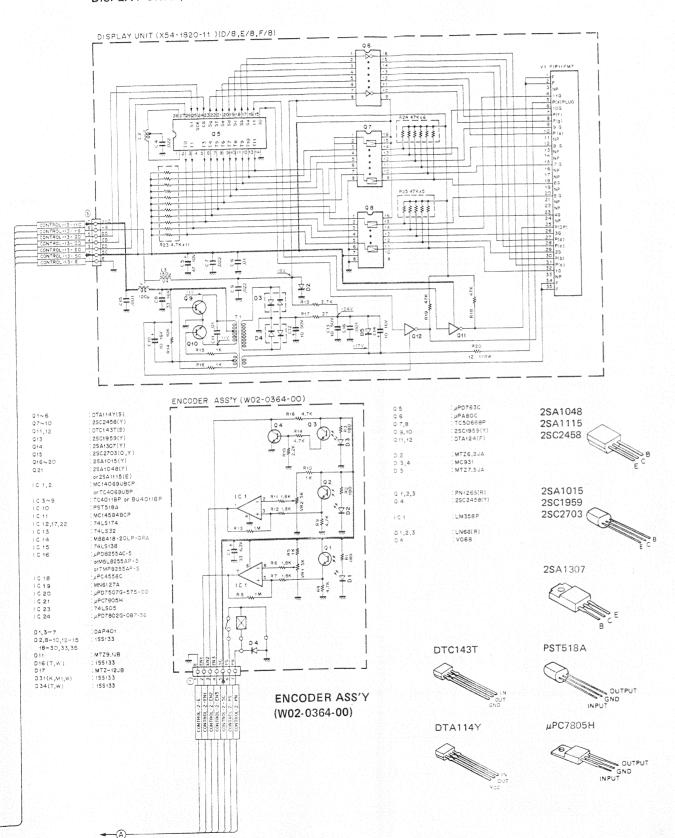




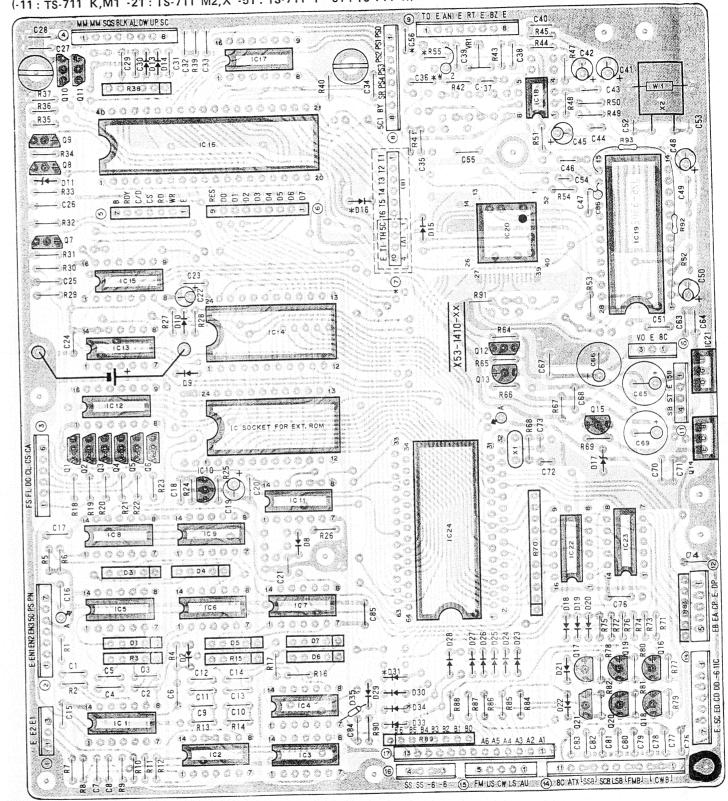


858 858 858 858 868 868 868

## DISPLAY UNIT (X54-1820-11)



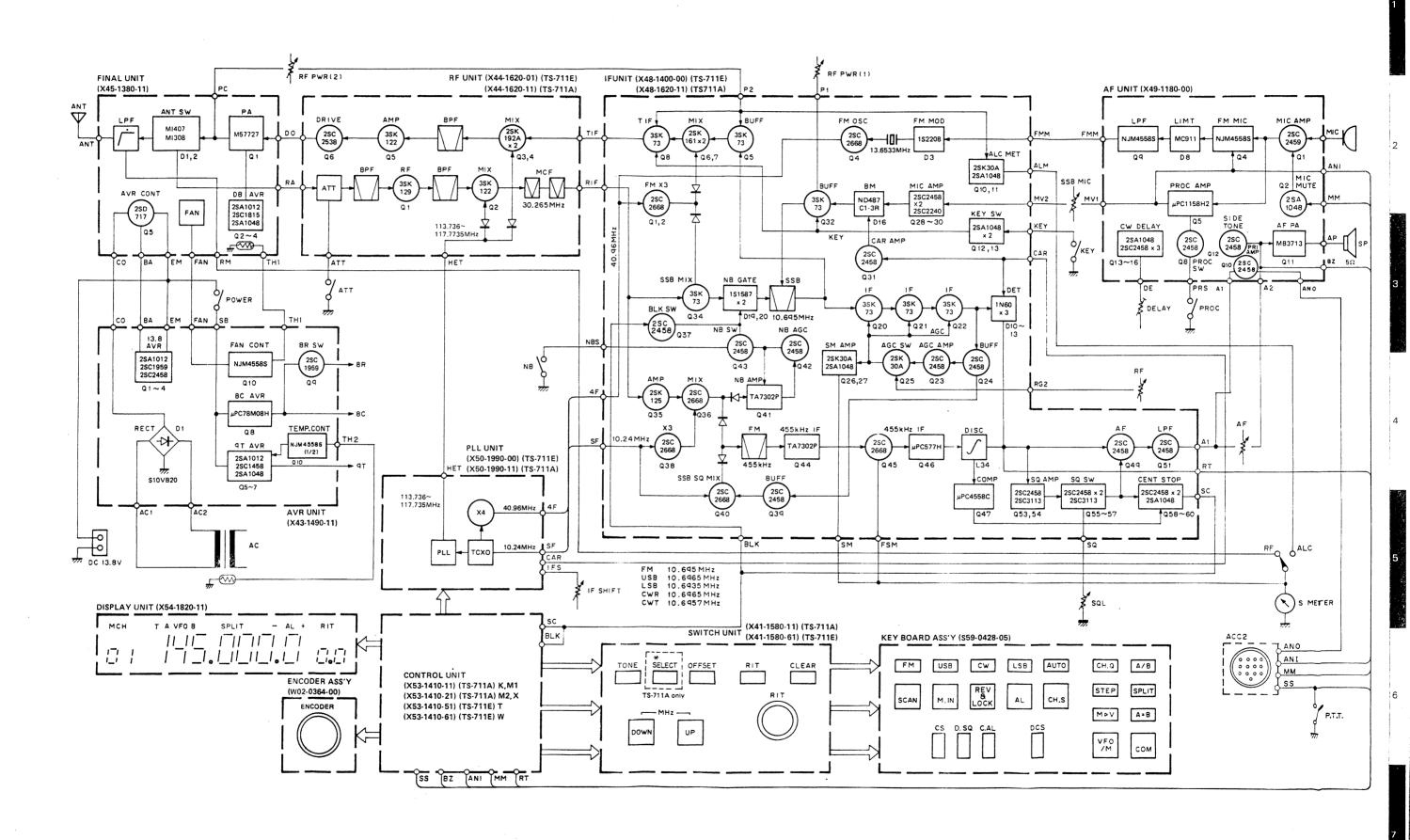
CONTROL UNIT (X53-1410-XX) Component side view (-11: TS-711 K,M1 -21: TS-711 M2,X -51: TS-711 T -61: TS-711 W)

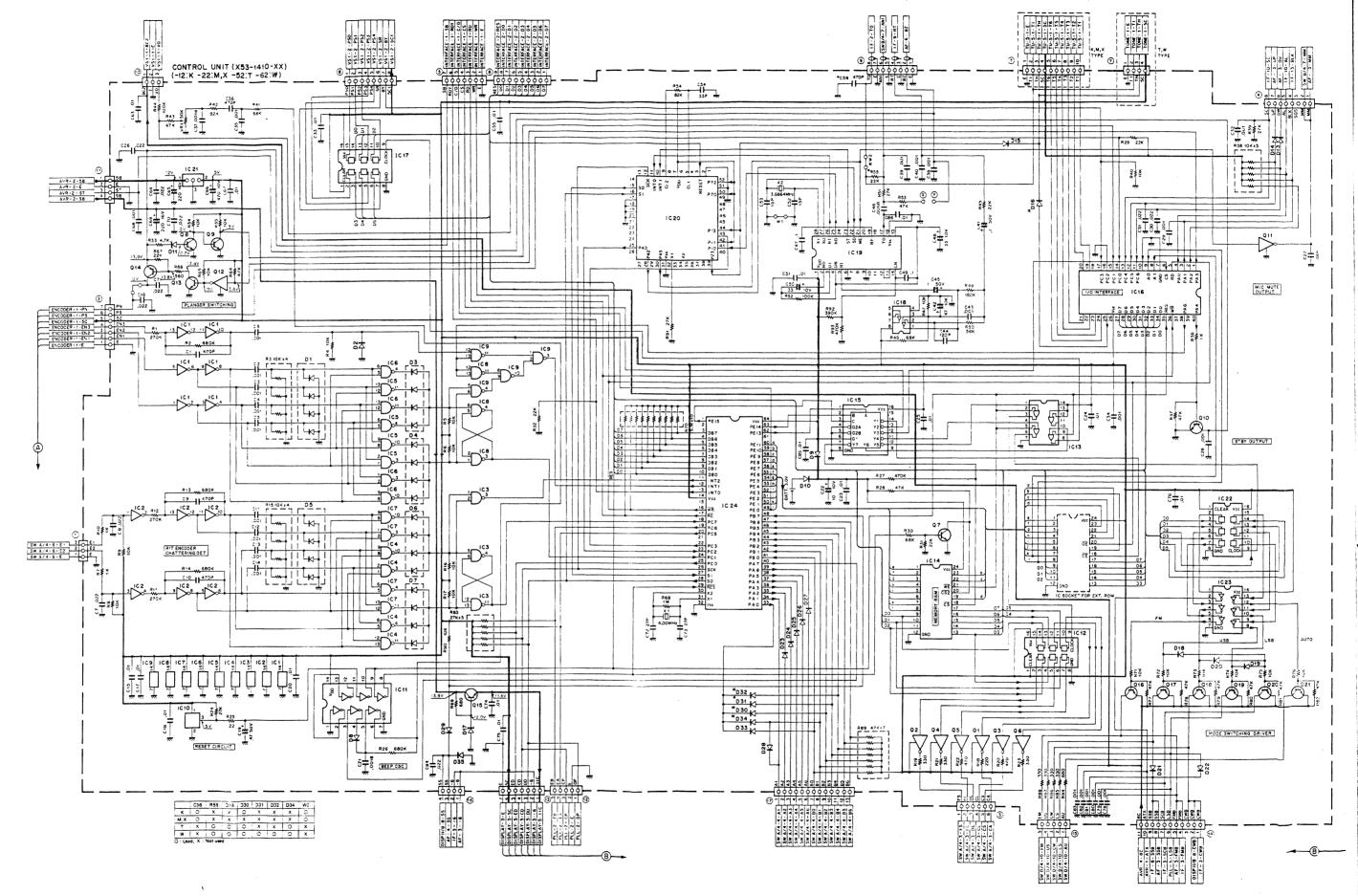


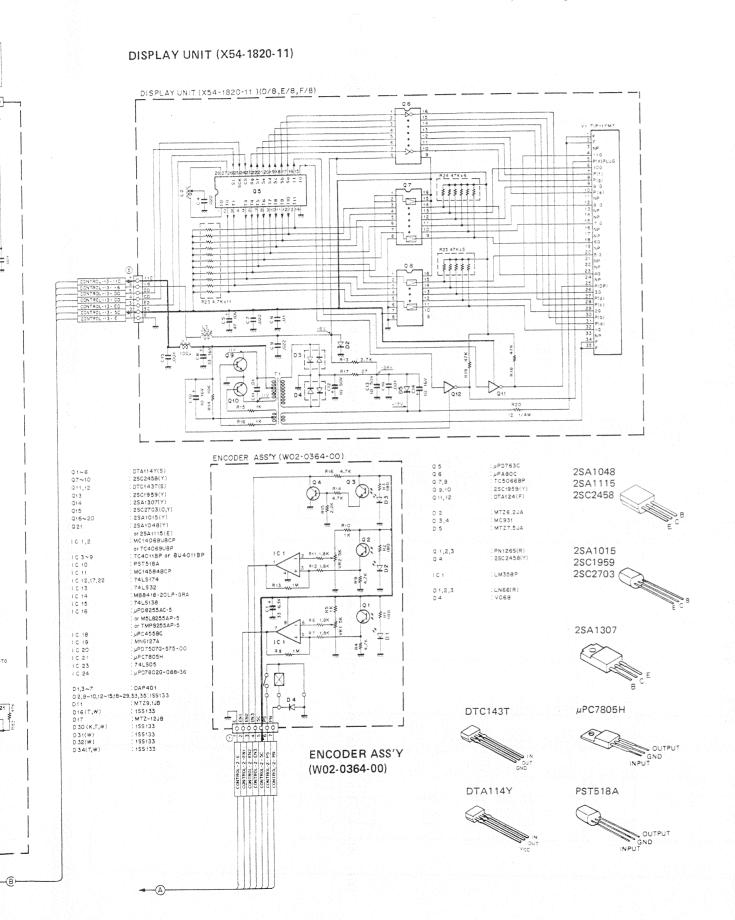
	C56	R55	D16	D31	D34	W2	⑦ - (A)	⑦ - (B)
K,M1	-	-	Х	0		0	X	0
M2,X	0	X	X	X	X	0	X	0
Т	X	0	0	X	0	Х	0	X
W	X	0	0	0	0	X	0	X

O: Used X: Not used

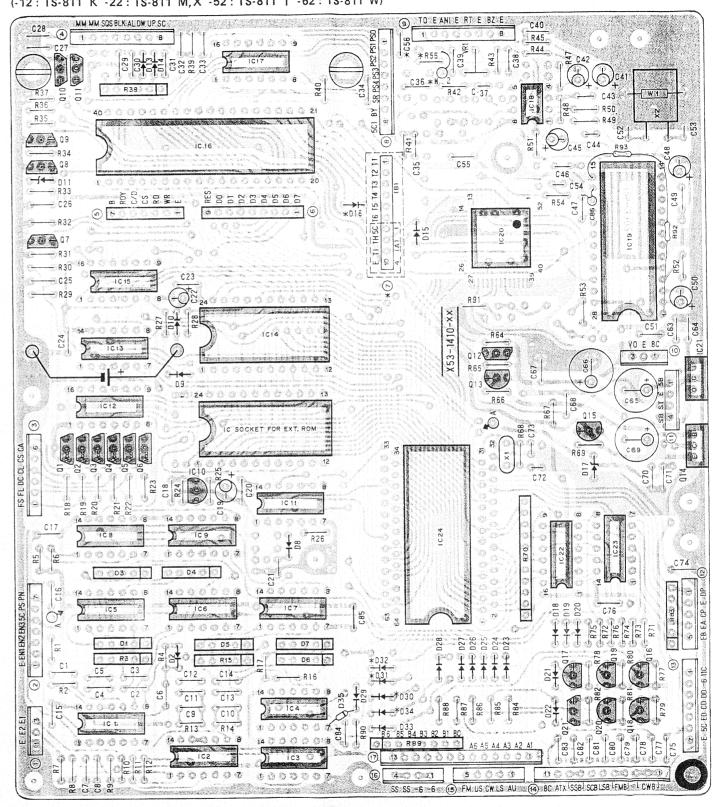
# PC BOARD VIEW/ BLOCK DIAGRAM TS-711A/E







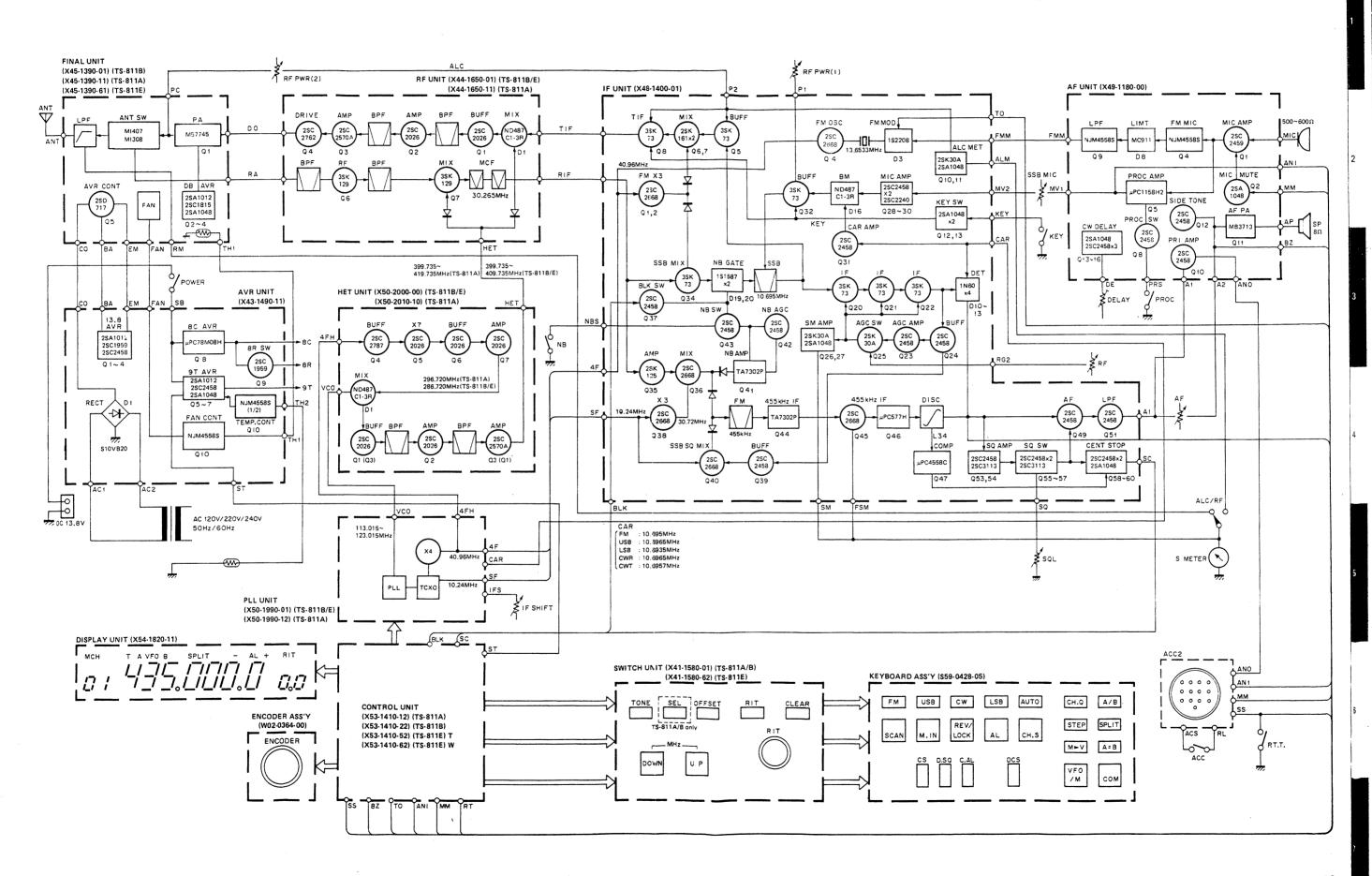
CONTROL UNIT (X53-1410-XX) Component side view (-12 : TS-811 K -22 : TS-811 M, X -52 : TS-811 T -62 : TS-811 W)

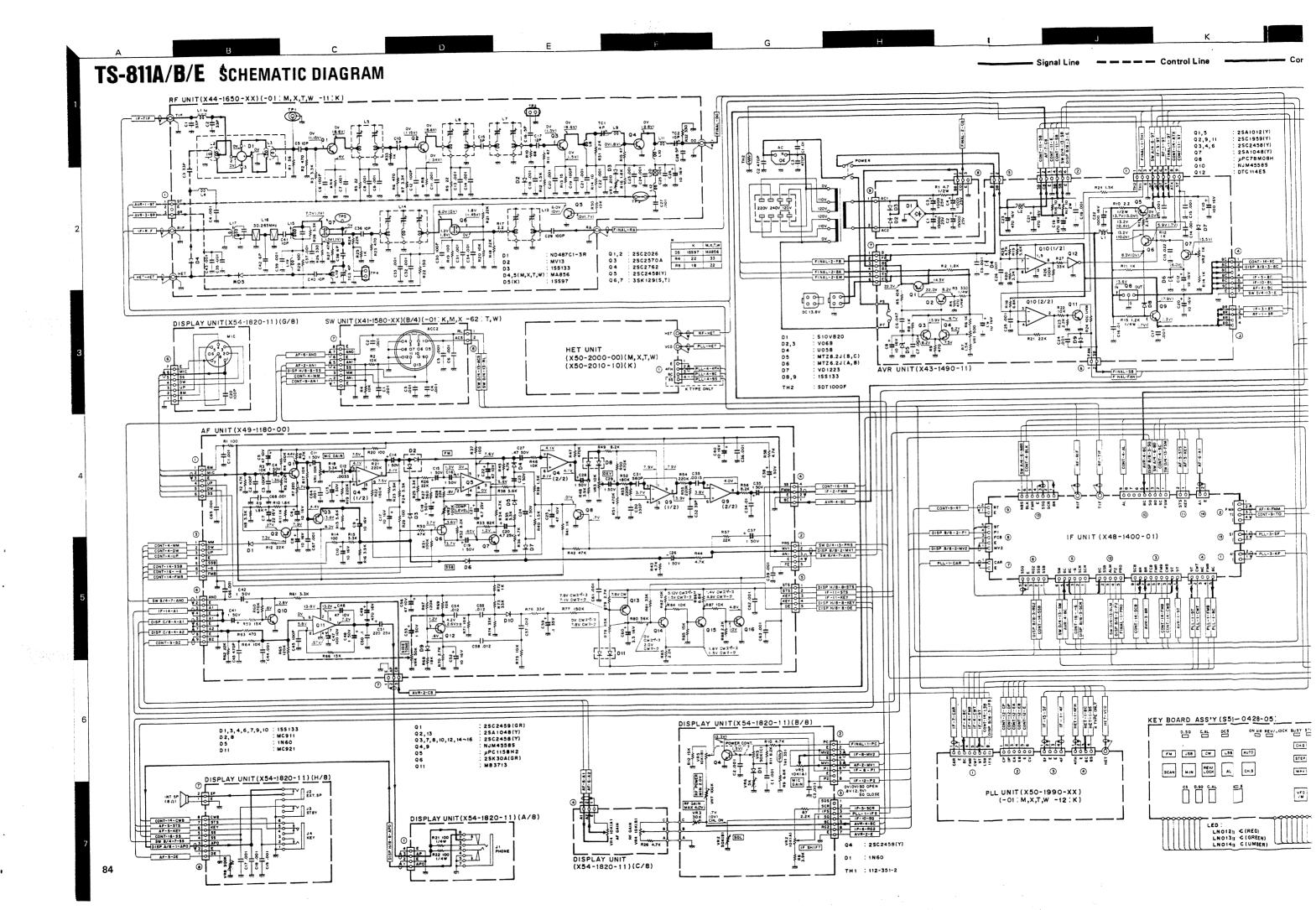


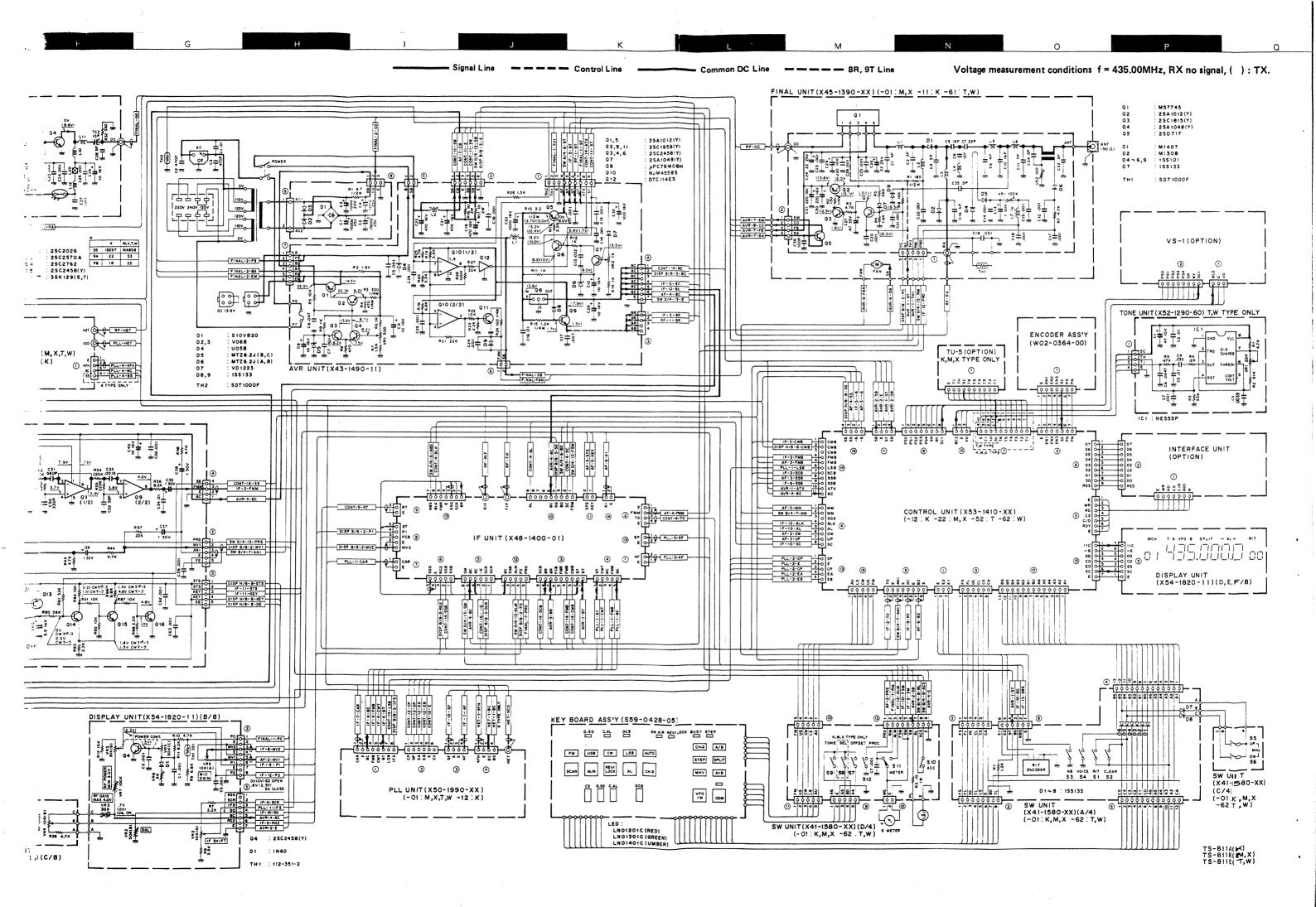
	C56	R55	D16	D30	D31	D32	D34	W2	7 -(A) 7 -(B)
K	0	X	X	0	X	X	X	0	X O
M,X	0	X	X	X	X	X	X	0	X O
T	X	0	0	0	X	X	0	Χ	O X
W	Χ	0	0	0	0	0	0	Χ	O X

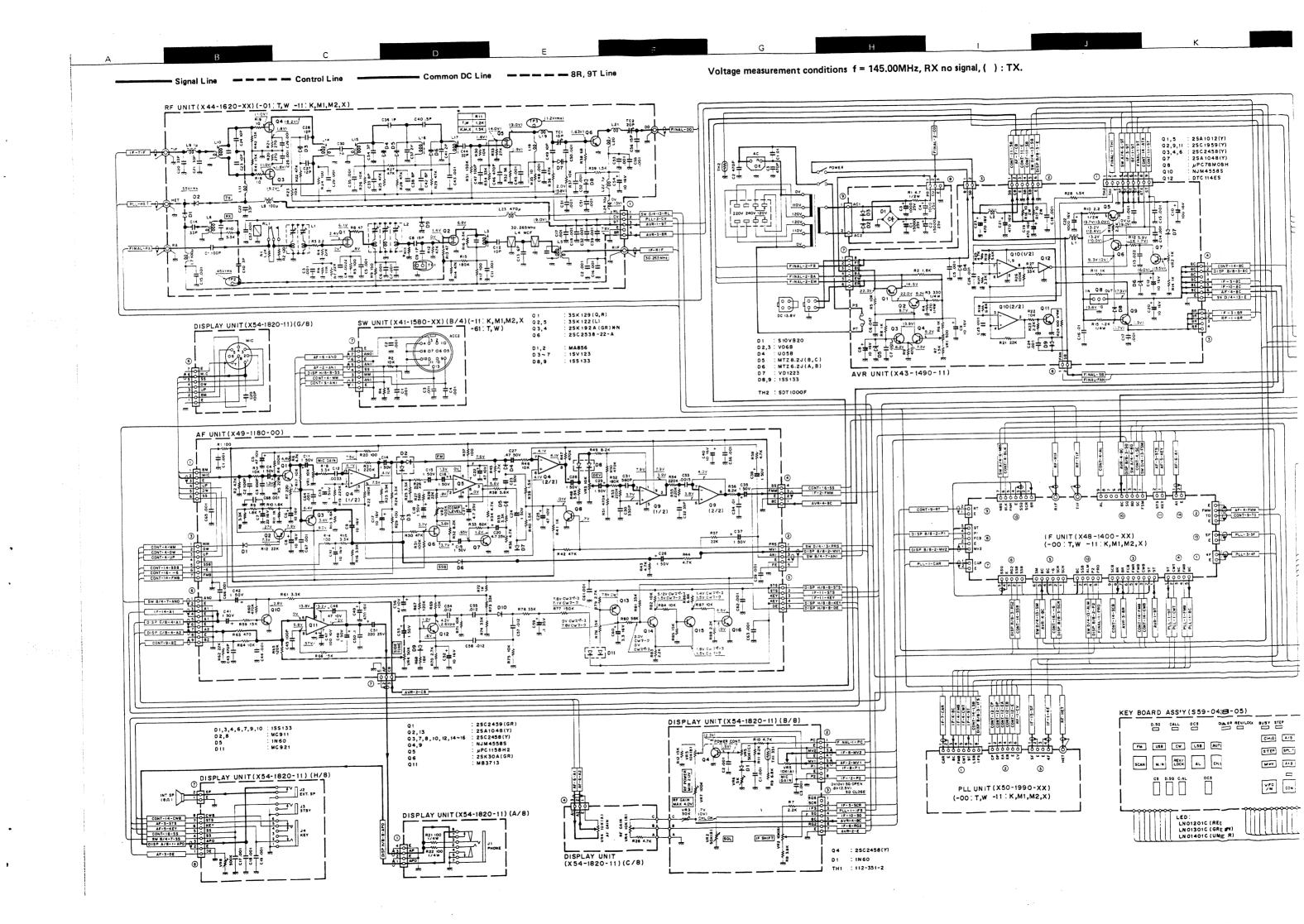
 $O: Used \ X: Not used$ 

# PC BOARD VIEW/BLOCK DIAGRAM TS-811A/B/E









TS-711A (K,M1,M2,X)

TS-711E(T,W)

85

: 25C2458(Y) : 1N60

# CD-10 (CALL SIGN DISPLAY)

## **PARTS LIST**

## CD-10 GENERAL

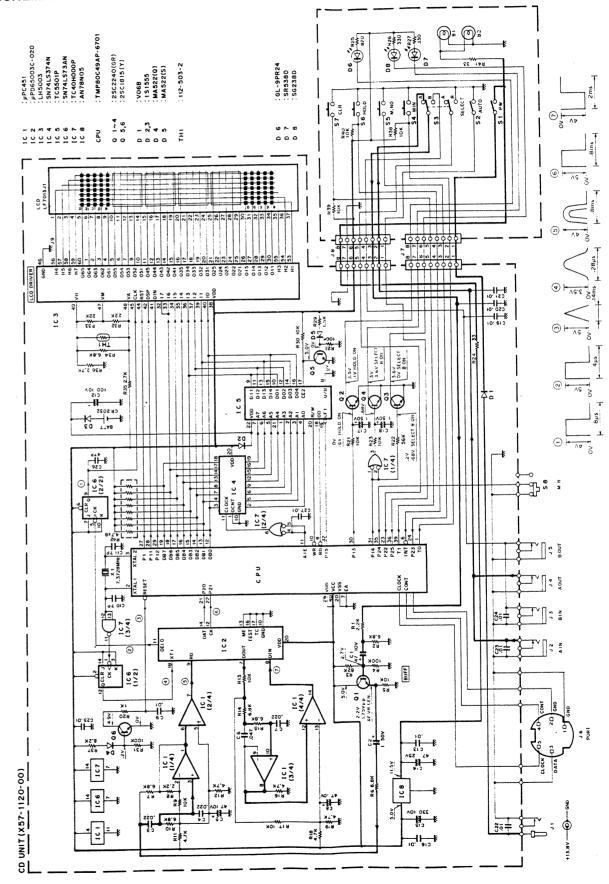
			DISTINCTION	& QUANTITY	d
PART.NO	NOTE	NAME & DESCRIPTION	011 021 051		REFERENCE.NO
102-0708-02	N N	CASE	1 1		
A02-0709-02	N	CASE	1	1 1 1 1 1 1	
A13-0662-03	. N.	BLACKET	1 1 1	<del></del>	
A20-2539-02	N.	PANEL	1 1 1		The second of th
B10-0671-04	i N	FRONT GLASS	1 1 1		
B11-0415-14		LCD LIGHT GUIDING PLATE	1 1 1		
B11-0425-04	N.	LCD LIGHT GUIDING SHEET	1 1 1 1		
B40-3560-04	N	MODEL NAME PLATE	1 1 1		
B42-2393-04	-	CABLE LABEL	1 1 1		The second secon
843-1042-04	N	BADGE	1 1 1	1 1 1 1 1 1	<ul><li>4. 2名 合理もの</li></ul>
843-1043-04	N	BADGE	1 1	<del></del>	
846-0411-00	+"-	USER & WARRANTY	1		!
B50-8013-00	l N	INSTRUCTION MANUAL	1 1 1		1
850-8014-00	N	INSTRUCTION MANUAL	1		
830-8014-00		1			
E07-0552-05	N	SP DIN PLUG	1, 1, 1,		
E29-0460-05	N N	EXCHANGE PLUG	1 1 1		
E30-1797-05	N	DC CABLE ASS'Y	1 1 1		
E30-1798-05	N	CABEL WITH PLUG	1 1 1		1
E30-1799-05	N	CABLE WITH PLUG	1 1 1		
E30-1/77-07	+	4.444			
G01-0821-04	1	COIL SPRING X9	7: 7: 7:		
G11-0614-04	N	RUBBER RING	2 2 2		
611-0814-04	- 1	ACCOCK MENT			
H01-4626-03	N	CARTON	1 1		
	N	CARTON	:     1		
H01-4627-03	N.	BUFFER(B)	1 1 1		
H12-1375-14		BUFFER	1 1 1 1		
H12-1372-13	N=	PROTECTIVE BAG 180X250	1 1 1 1		
H25-0112-04		IBAG 125X250	1 1 1		
H25-0103-04	1	BAG(ACS) 60X110	1 1 1		
H25-0029-04	ì	PROTECTIVE BAG 60X200			
H25-0049-03		PRUTECTIVE BAG BOX200	<del></del>		
	١	RUBBER FOOT ACS	. 1 1 1		一切 「 」 いいが 自事業態
J02-0435-05	N	FRONT FOOT ACS	1 1 1 1		
102-0436-04	N	SW GUIDE A (TACT KNOB)	: 4 4 4		
J29-0407-04	1	SW GUID X3	3 3 3		i
129-0409-04	- 1	ROUND BOSS M2X6	2 2 2		
J32-0785-04	_	INDUNU BUSS HEND			
		PUSH KNOB (E)	3 3 3		
K27-0440-04		PUSH KNOB (F)	1 1 1		
K27-0441-04		SQUARE KNOB (A)	2 2 2		
K27-0445-05		SQUARE KNOB (B)	1 1 1		i
K27-0446-05		SQUAKE KNOS (B)			
		DRESSED SCREW	2 2		네 요즘 살리가 없었다고 동화를 꾸게 되어
N08-0513-04	N	SCREW (OTHERS)	2 2 2		
N09-0633-05	f	NUT.	2 2 2		The state of the s
N14-0115-05		FLAT WASHER	2 2 2		1
N15-1040-46			2 2 2		
N16-0040-46		SPRING WASHER	2 2 2		
N30-2006-41		PAN HD SCREW	2 2 2		그 그는 건강에 되는 것이 다시네었다.
N30-4041-46		PAN HD SCREW	1 1 1		
N35-2004-41	1	BIND SCREW	3 3 3		
N89-2005-46		BIND TAPPING SCREW			
	N	CD UNIT	1 1 1		
X57-1120-00					

#### CD UNIT (X57-1120-00)

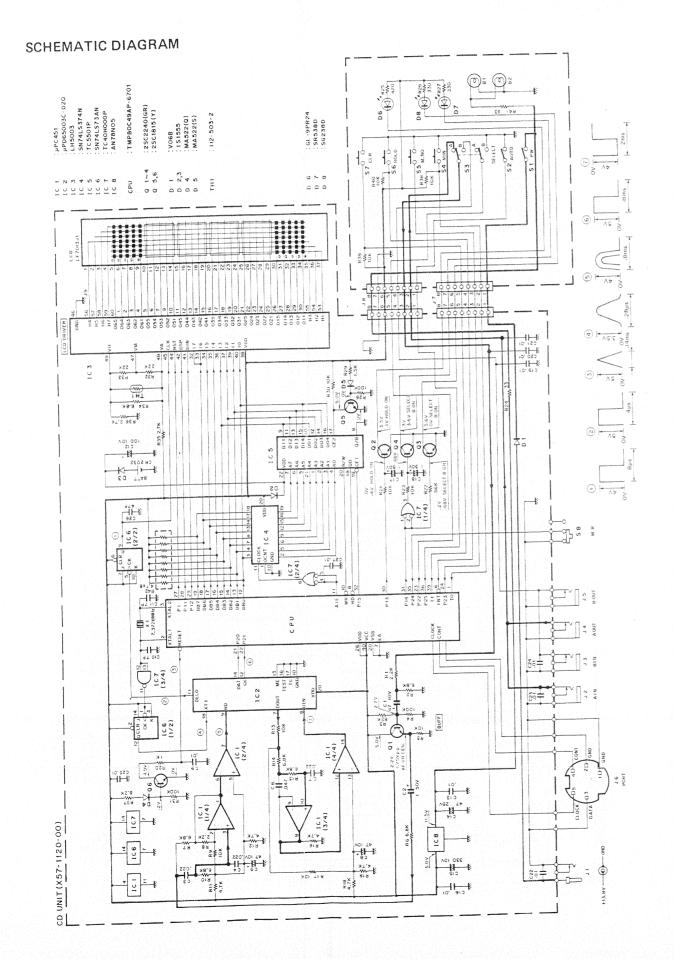
	_			5 6	7 8	コスク			
		1 4 5 3 5 8 ± h 2	200:						ליב כית ל ב ל כל ד
	E-39	313373 + 42	1			, 1			IC , 8
AN78N05	N	10	•	1 1	1 1	i 1		1 1	
			2	1 1	1 1	1 1		1 !	B , 1, 2
830-0833-05	N_	LAMP							
			1			. 1	. !	1 1	c , 11
CC45CH1H22OJ		CERAMIC 22P 5CV		1 1		1 i	i 1		C , 26
CC43CH1H470J		CERAMIC 47P 50V	1		-				C , 1, 5, 8
CE04W1A470M	1	ELECTRO 47 10V	3	1 1	1			1 !	C , 12
CEO4W1A101M		ELECTRO 100 10V	1	1 1	1 1			1 1	c , 15
CEO4WIA331M		ELECTRO 330 10V	1.					<del></del>	
	<del></del>	ELECTRO 47 25V	:					1 . 17	
CE04W1E470M		ELECTRO 1 50V	3					1. 1.	C , 2, 17, 18
CEC4W1H010M		CERAMIC 0.01 50V	3		1 1				c , 9, 13, 16
CK45F1H103Z			1					1	C , 27
CK4581H102K	i		3	1	1 1				C , 3, 4, 7
CQ92M1H223K	1	MYLAR 0.022 50V	1	i				1 1	lr . A
CQ92M1H473K	1	MYLAR 0.047 50V						-	C , 19, 20, 21, 22, 23, 24, 2
C91-0131-05	1	CERAMIC 0.01 25V	7					1 1	
	1		1			1			J , 1.
E03-0161-05	N	DC JACK	1 1		1				J , 6
E06-0555-05	N	SP SOCKET	1;		1 7			1 1	
	1"	PHONE JACK	4		1			1 1	1 , 2, 3, 4, 5
E11-0414-05	1	PHONE SHOW	1 1	1 1		1			
· · · · · · · · · · · · · · · · · · ·		LED RED	1 1						D , 6
GL9PR24	1	LED RED	1 1		1 1	i i	1 1	1 1	
	į		1 1	1 1			!!!	1 1	
LF7013J1	N	LCD			-				IC , 3
LH5003	Ŋ	IC	1	1 1	1			1 1	X , 1
L77-1268-05	N	XTAL 7.3728MHZ	: 1			1		1 1	1
£//-1200-03	1			1		-			9 , 4
MA522(Q)	+	DIODE	1				:		3 , 4
	N	DIODE	11	1 . 1			1 1	1 1	0 , 5
MA522(S)	7	01002						1 1	
		MULTIPLE RESISTOR	1 1					1	R , 42
R90-0557-05	i	MULITALE KESTSION	1 -	i i	i		i i i		1
	1		1	1	!		1 1 1	1 1	0 , 8
SG238D	\	0100E	-				-		16 , 4
SN74LS374N		IC		1		l i	1 1	l i	10 . 6
SN74LS73AN	-	lic	1	1 1	i		1 ! !	1 }	D , 7
SR538D		DIODE	1 !						is , 8
\$31-1417-05	· N	SLIDE SWITCH	1	1 1	i		1 1	! !	
		PUSH SW	3	1 1		!!	1 1 1		
\$40-2443-05	N	TACT SWITCH	4	1					5 , 4, 5, 6, 7
\$50-1426-05		180. 541.00	-					1 1	1
	1	1	:	1 1			: ! !	1 1	IC , 7
TC40H000P	N	ic	11	1					10 , 5
TC5501P	N	IC	1						CPU , 1
TMP80C49AP-670	1 N	CPU			i				
	1		1 1		1	1		1.0	10 , 1
UPC451C	1	IC		<del></del>	<del>_</del> ;	<del></del>	+		IC , 2
UP065003C-020	1	ic	1:	!	1	1 1	1 1 1		
3. 3030030 020	1	177	1 :	1 i			1 i l		0 . 1
	1	DIODE	1 1	! !					10 , 1
V06B	+						: 1 1	1 1	1
W09-0326-05		LITHIUM BATTERY	1						
		60.49///9	. 2						0 , 2, 3
151555		DIODE OR 1N4448	1 1	- i - i			: [ [		TH , 1
112-503-2	1	THERMISTOR	1 1	1	İ	i :	1 1	1 1	1.5
,	1					-		<del></del>	9 , 1, 2, 3, 4
25C2240(GR)	+	TR	4	i 1	i	i :	1 [ [	1 1	9 , 5, 6
		TR	2 !						

# CD-10 (CALL SIGN DISPLAY)

## SCHEMATIC DIAGRAM

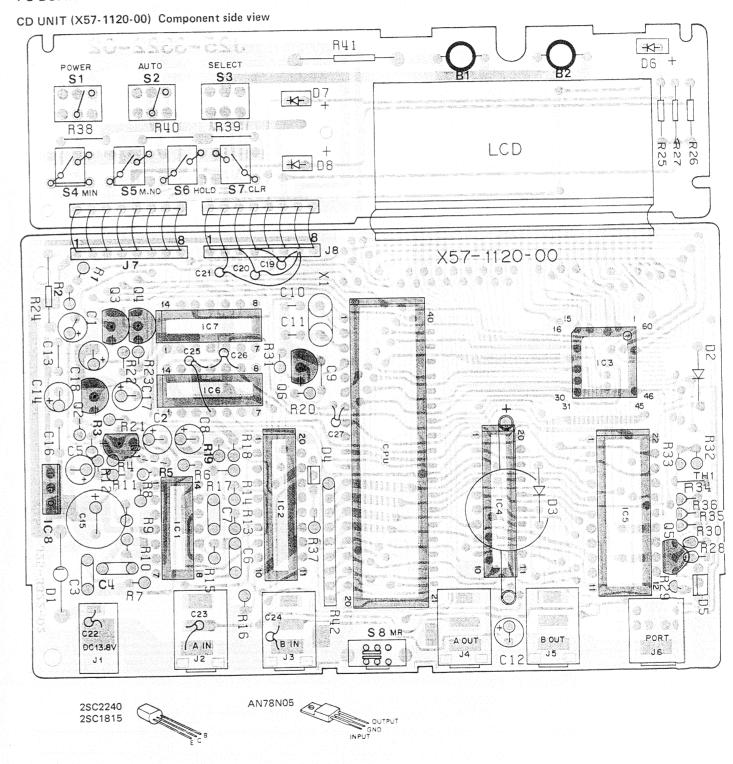


# CD-10 (CALL SIGN DISPLAY)



# CD-10 (CALL SIGN DISPLAY)

## PC BOARD VIEW



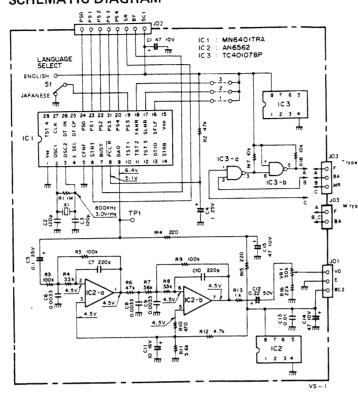
# TS-711/811

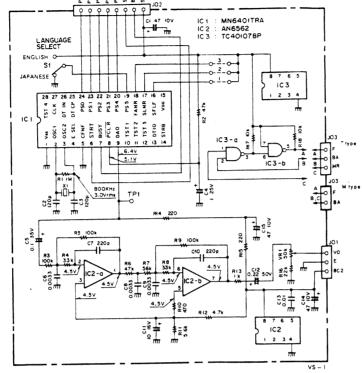
# VS-1 (VOICE SYNTHESIZER)

## **PARTS LIST**

Part No.	Re- marks	Description	Ref. No.
B50-4035-00	N	Instruction manual	
CC45SL1H121J		C 120P x 2	C2,3
CE04W1A470M CE04W1C100M CE04W1HR22M		E 47 10V E 10 16V E 0.22 50V	C1,14,15 C11 C12
CK45B1H221K		C 220P × 2	C7,10
CQ92M1H332K		ML 0.0033 × 3	C6,8,9
CS15E1E010M CS15E1V0R1M		T 1 25V T 0.1 35V	C4 C5
C91-0131-05		C 0.01 (SP)	C13
E40-0273-05 E40-0373-05 E40-0373-05 E40-0873-05	Δ Δ Δ	Mini connector 2P N Mini connector 3P N Mini connector x 2 3P N Mini connector 8P	1
H01-4481-03 H01-4501-03 H25-0029-04	N A N A	Packing Carton (mside)	и Г
L78-0006-05	N	Ceramic OSC	X1
N89-3006-46		Tapping screw x 4	
R12-4408-05		Trim. pot. 50kΩ	VR1
S31-1411-05	N	Slide switch	S1
AN6562 MN6401TRA TC40107BP	2 2 2	IC IC IC	IC2 IC1 IC3

## SCHEMATIC DIAGRAM





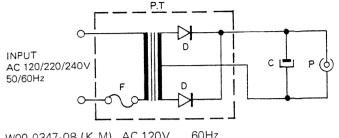
## AC-10 SPECIFICATIONS

Input voltage
Frequency response 50/60Hz
Output voltage DC 13.8V
Output current 200mA

## AC-10 SCHEMATIC DIAGRAM

AC-10 (CD-10 FOR CHARGER)/TU-5 (TONE UNIT)

(Y61-2680-XX) (-21 : K,M -51 : T -61 : W -71 : X)



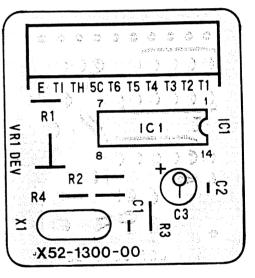
W09-0347-08 (K,M)	AC 120V	60Hz
W09-0348-08 (T)	AC 240V	60Hz
W09-0349-08 (W)	AC 220V	50/60Hz
W09-0350-08 (X)	AC 240V	50/60Hz

## TU-5 SCHEMATIC DIAGRAM

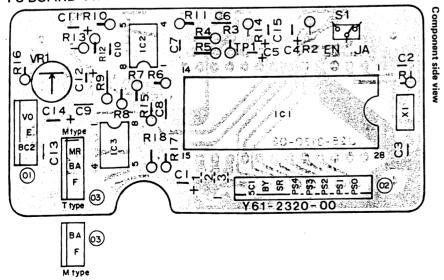
# TONE UNIT (X52-1300-00) IC1: MX-315

## **TU-5 PC BOARD VIEW**

# TONE UNIT (X52-1300-00) Component side view

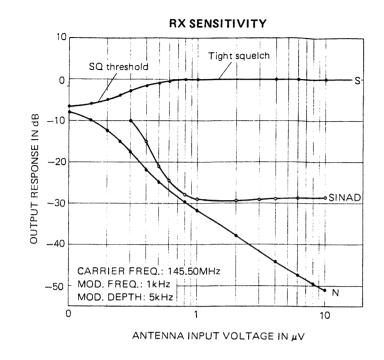


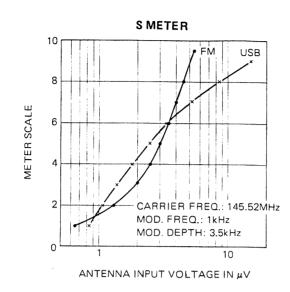
## PC BOARD VIEW



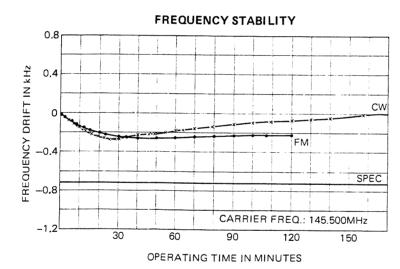
# TS-711/811

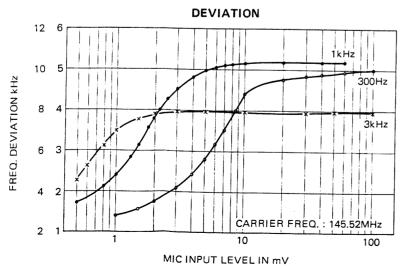
# **TS-711 REFERENCE DATA**



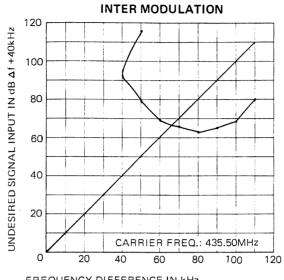


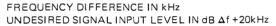
Mode	I FM	USB
Scale	$\dashv$	
S-9+2	9 <b>μ</b> V	14µV
S-9+4	0 16μV	1.3mV

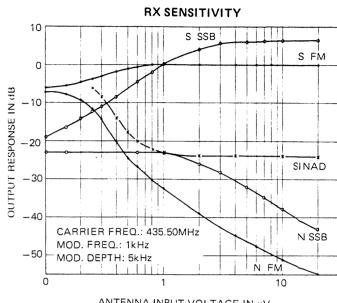




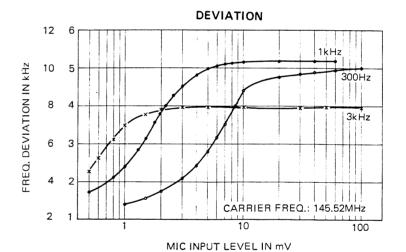
# **TS-811 REFERENCE DATA**



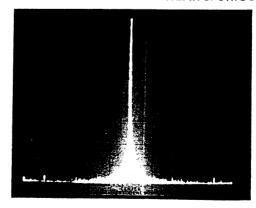




ANTENNA INPUT VOLTAGE IN µV



## **NEAR SPURIOUS RESPONSE**



CARRIER FREQ.: 430.00MHz RF POWER: 10.5W SCAN WIDTH: 200kHz/DIV BAND WIDTH: 1kHz SCAN TIME: 0.5 SEC. VIDEO FILTER: 10kHz INPUT ATT .: - 20dB LOG REF LEVEL: -2.5dBm 10dB/DIV

# TS-711 SPECIFICATION

[General]	
Frequency range	144 O 148 O MHz (TS.711 A)
Frequency range	144.0 ~ 146.0 MHz (TS-711E)
Radio wave mode	· ·
Antenna impedance	
Operating temperature	−10°C ~ +50°C
Power voltage	AC120V/240V/220V, 50/60 Hz
1 Ovor Voltago	DC 13.8V (12V ~ 16V)
Grounding	
Power consumption	170W, 6.5A (DC13.8V) at maximum transmission
·	50W, 1.2A (DC13.8V) in receive mode without receiving signal
Frequency tolerance (-10°C ~ +50°C)	Within ± 3 ppM (SSB/CW)
	Within $\pm 5$ ppM (FM)
Frequency stability	$\pm$ 300 Hz 1 $\sim$ 60 minutes after power on
	Within 50 Hz/every 30 minutes 60 minutes later (after power on)
Dimensions	
	(W279 x H108 x D327 mm) – Projected parts measured.
Weight	7.1 kg (15.62 lb)
[Transmitter]	
RF output power	25 watts (One minute transmission/three minutes reception)
	RF output variable from approx. 2W to maximum
Modulation	
Spurious radiation	
Carrier surpression	Less than -40 dB
Side band surpression	Less than -40 db
Maximum frequency deviation (FM)	±5 KMZ
MIC impedance	500 ~ 600 12
[Receiver]	
•	Double superheterodyne
Circuitry	
•	1st 30.265 MHz
CircuitryIntermediate frequency	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)
CircuitryIntermediate frequency	1st 30.265 MHz
Circuitry Intermediate frequency  Receiver sensitivity FM	<ul> <li> 1st 30.265 MHz</li> <li>2nd 10.695 MHz (SSB/CW), 455 kHz (FM)</li> <li> 12 dB SINAD less than 0.22 μV (TS-711A)</li> <li>12 dB SINAD less than 0.2 μV (TS-711E)</li> <li>S + N/N more than 50 dB at 1.0 mV input</li> </ul>
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 30.20 $\mu$ V (TS-711A) 12 dB SINAD less than 0.22 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input 30.5 S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A)
Circuitry Intermediate frequency  Receiver sensitivity FM  SSB/CW	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 31.2 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input 3. S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E)
Circuitry Intermediate frequency  Receiver sensitivity FM  SSB/CW	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 30.20 $\mu$ V (TS-711A) 12 dB SINAD less than 0.22 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input 30.5 S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) 3. More than 12 kHz (-6 dB)
Circuitry Intermediate frequency  Receiver sensitivity FM  SSB/CW	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB)
Circuitry Intermediate frequency  Receiver sensitivity FM  SSB/CW	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-6 dB)
Circuitry Intermediate frequency  Receiver sensitivity FM  SSB/CW  Receiver selectivity FM  SSB/CW	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-6 dB) Less than 4.8 kHz (-60 dB)
Circuitry	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-6 dB) Less than 4.8 kHz (-60 dB) Better than 70 dB
Circuitry	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 μV (TS-711A) 12 dB SINAD less than 0.2 μV (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 μV (TS-711A) S + N/N 10 dB less than 0.13 μV (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-60 dB) Less than 4.8 kHz (-60 dB) Better than 70 dB Less than 0.16 μV (threshold)
Circuitry	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 μV (TS-711A) 12 dB SINAD less than 0.2 μV (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 μV (TS-711A) S + N/N 10 dB less than 0.13 μV (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-60 dB) Better than 70 dB Less than 0.16 μV (threshold) Less than 0.16 μV (threshold)
Circuitry	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-6 dB) Less than 4.8 kHz (-60 dB) Better than 70 dB Less than 0.16 $\mu$ V (threshold) Less than 0.20 watts across 8 ohms load (5% dist.)
Circuitry	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM) 12 dB SINAD less than 0.22 $\mu$ V (TS-711A) 12 dB SINAD less than 0.2 $\mu$ V (TS-711E) S + N/N more than 50 dB at 1.0 mV input S + N/N 10 dB less than 0.16 $\mu$ V (TS-711A) S + N/N 10 dB less than 0.13 $\mu$ V (TS-711E) More than 12 kHz (-6 dB) Less than 24 kHz (-60 dB) More than 2.2 kHz (-6 dB) Less than 4.8 kHz (-60 dB) Better than 70 dB Less than 0.16 $\mu$ V (threshold) Less than 0.20 watts across 8 ohms load (5% dist.)
Circuitry Intermediate frequency  Receiver sensitivity FM  SSB/CW  Receiver selectivity FM  SSB/CW  Spurious response  Squelch sensitivity  Auto scan stop level  Audio output power  Audio output impedance  [DCS control]	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Less than 4.8 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Less than 4.8 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms  NRZ equal-length code  MSK modulation
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Less than 4.8 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms  NRZ equal-length code  MSK modulation  ± 2.5 kHz or more
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Less than 4.8 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms  NRZ equal-length code  MSK modulation  ± 2.5 kHz or more  ± 5 kHz or less
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms  NRZ equal-length code  MSK modulation  ± 2.5 kHz or more  ± 5 kHz or less  ± 3.5 kHz Standard
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Less than 4.8 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms  NRZ equal-length code  MSK modulation  ± 2.5 kHz or more  ± 5 kHz or less  ± 3.5 kHz Standard  1200 Hz ± 200PPM
Circuitry Intermediate frequency  Receiver sensitivity FM	1st 30.265 MHz 2nd 10.695 MHz (SSB/CW), 455 kHz (FM)  12 dB SINAD less than 0.22 μV (TS-711A)  12 dB SINAD less than 0.2 μV (TS-711E)  S + N/N more than 50 dB at 1.0 mV input  S + N/N 10 dB less than 0.16 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711A)  S + N/N 10 dB less than 0.13 μV (TS-711E)  More than 12 kHz (-6 dB)  Less than 24 kHz (-60 dB)  Less than 2.2 kHz (-60 dB)  Better than 70 dB  Less than 0.16 μV (threshold)  Less than 0.2 μV (threshold)  More than 2.0 watts across 8 ohms load (5% dist.)  8 ohms  NRZ equal-length code  MSK modulation  ± 2.5 kHz or less  ± 3.5 kHz Standard  1200 Hz ± 200 PPM  1800 Hz ± 200 PPM

Note: Circuit and ratings are subject to change without notice due to developments in technology.

# TS-811A/B/E

## TS-811 SPECIFICATION

430 ~ 450MHz (TS-811A) Antenna impedance . . . . . . . . . . . . . . . . . 50 ohms DC 13.8V (12V ~ 16V) 240W, 8.5A (DC 13.8V) at maximum transmission (TS-811A) 50W, 1.2A (DC 13.8V) in receive mode without receiving signal . Within  $\pm$  3PPM (SSB, CW : 430  $\sim$  440MHz) Frequency tolerance (-10°C ~ +50°C) ...... Within ± 5PPM (SSB, CW ; 440 ~ 450MHz) Within ± 5PPM (FM)  $\pm$  1200Hz 1  $\simeq$  60 minutes after power on Frequency stability (430 ~ 440MHz) . . . . . . . . . Within 50Hz/every 30 minutes 60 minutes later (after power on) W 270 x H 96 x D 260 mm (W 279 x H 108 x D 327 mm) - projected parts measured. . 7.2kg (15.6lb) [Transmitter] RF output variable from approx. 2W to maximum Spurious radiation . . . . . . . . . . . . Less than -60dB Carrier surpression . . . . . . . . . Less than -40dB Side band supression . . . . . . . . . . . . . . . Less than -40dB Maximum frequency deviation (FM) . . . . . . . . ± 5kHz Modulation distortion (FM 60%) . . . . . . . Less than 3% (300Hz ~ 3kHz) 30.265MHz Intermediate frequency . . . . . . . . . . . . . . . . . 1st 10.695MHz (SSB/CW), 455kHz (FM) 12dB SINAD less than 0.22µV (TS-811A) S + N/N more than 50dB at 1.0mV input SSB/CW . . . . . . . . . . . . . . . . . . S + N/N 10dB less than 0.13μV (TS-811B/E) S + N/N 10dB less than  $0.14\mu V$  (TS-811A) Less than 24kHz (-60dB) SSB/CW . . . . . . . . . . . . . . . . . More than 2.2kHz (--6dB) Less than 4.8kHz (-60dB) Better than 60dB Squeich sensitivity . . . . . . . . . . . . . . . Less than 0.16µV (threshold) Auto scan stop level . . . . . . . . . . . . . . . Less than 0.2µV (threshold) [DCS control] Code ......NRZ equal-length code ± 5kHz or less ± 3.5kHz Standard Note: Circuit and ratings are subject to change without notice due to developments in technology.

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